Fortress



English Civil War Fortifications 1642–51

Peter Harrington • Illustrated by D Spedaliere & S S Spedaliere



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Artist's note

Our sincere thanks to all who have helped in the preparation of this book. We would like to dedicate this book to our dearest daughter Alina and to Lior and Rani, her wonderful cousins.
Readers may care to note that the original paintings from which the colour plates in this book were prepared are available for private sale. All reproduction copyright whatsoever is retained by the Publishers. All enquiries should be addressed to:

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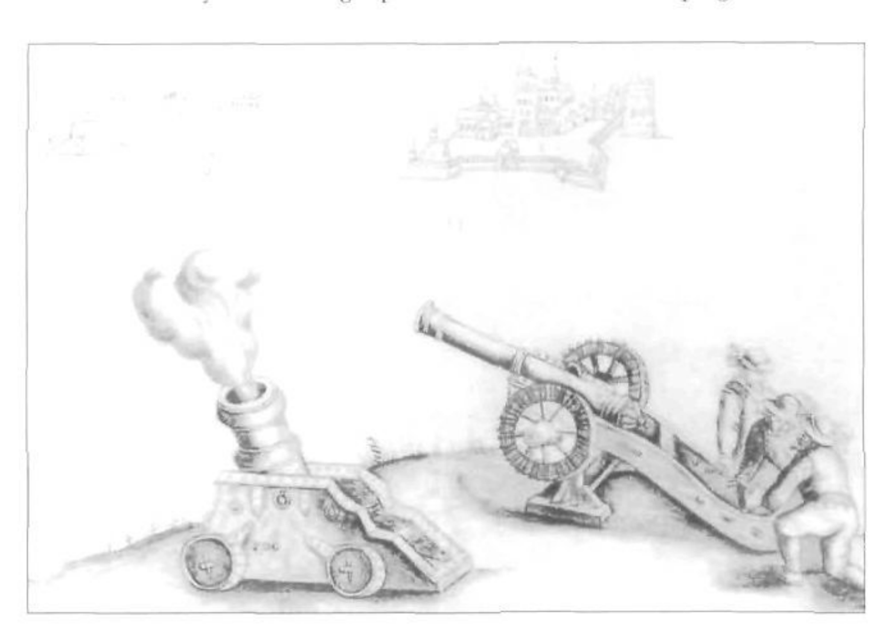
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Introduction

During the 1640s, a growing internal constitutional and religious crisis erupted into three episodes of open warfare known collectively as the English, or British, Civil Wars, as well as the Great Rebellion. This was the first prolonged period of conflict in the British Isles involving the use of artillery and gunpowder, and both the cannon ball and bullet came to dominate the battlefield and siege. While there were several significant pitched battles between the Royalist supporters of King Charles I and the forces loyal to Parliament, much of the fighting in the early years of the war ended in stalemate. This was due in part to the nature of warfare at the time, specifically the deficiencies in weaponry, tactics and troop training, and the reluctance of commanders, particularly the Parliamentarians, to prosecute the war to its end for fear of the consequences. Compounding this were county loyalties, which meant that troops were often loath to leave the borders of their own counties, the frequent dispersal of armies after battle, and the poor standard of the fighting forces: all factors that ensured that neither side were able, or willing, to take advantage of a victory.

Sieges that aimed at isolating and reducing fortified places became the dominant instrument for prosecuting the war; there were over 300 sieges during the conflict. Control of major places was the key to success, and the belligerents vied for possession of important towns, ports, garrisons and river crossings. The capture of cities and towns, and their hinterlands, brought money to further the cause, materials for re-supply, recruits, food and quarters for soldiers. The possession of ports enabled supplies to be brought in from the Continent, as well as naval operations to be mounted. In England, some 30 towns and cities withstood sieges lasting weeks or months, while numerous smaller garrisons were also attacked. Castles and manor houses became targets with few escaping damage. Consequently, protective fortifications were vital to the besieged as well as the besieger.

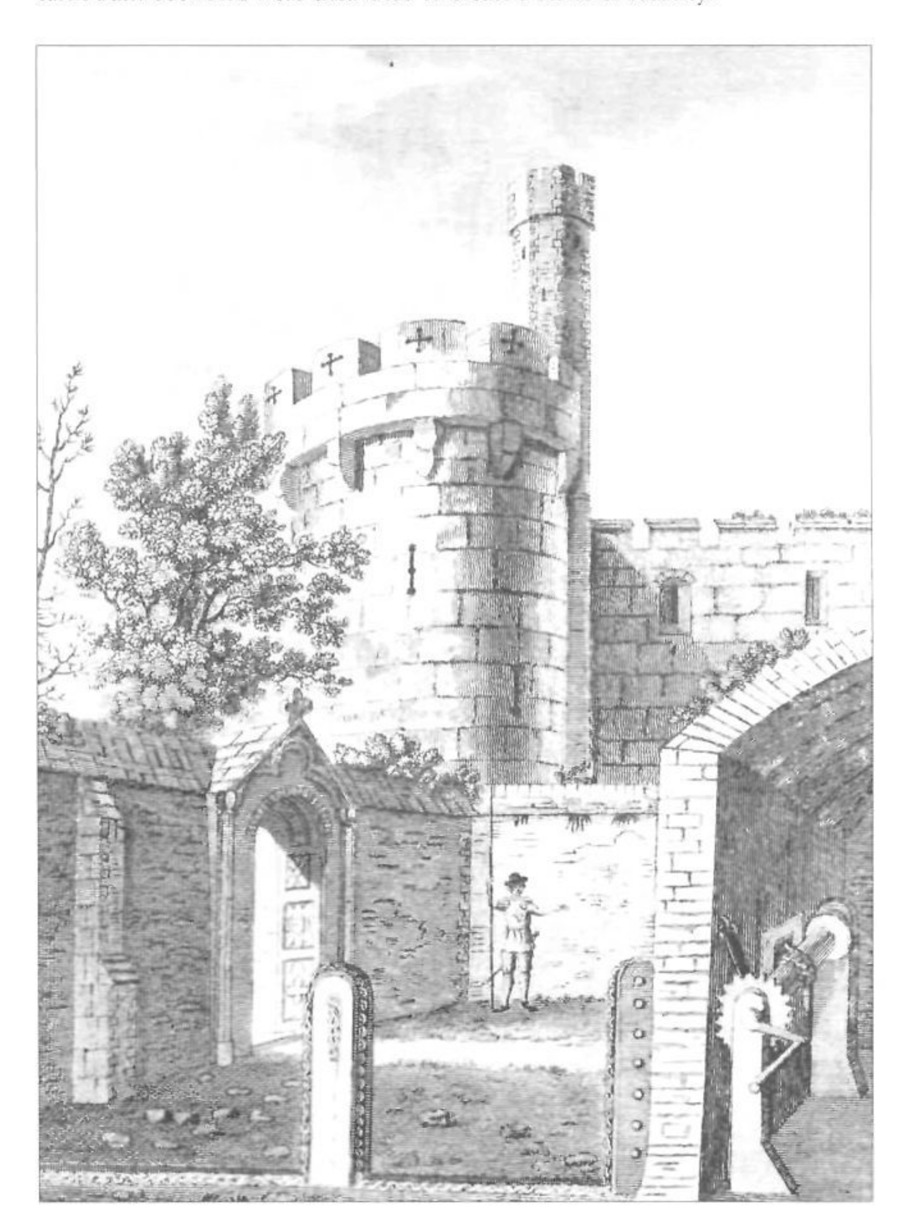
The techniques of warfare had been transformed during the 15th and 16th centuries by the use of gunpowder and the substantial progress made in



Typical siege weapons of the period, from a contemporary drawing. On the left is a mortar, on the right a culverin; a fortified town is in the distance. Mortars had more of a psychological impact on besieged garrisons rather than a physical one.

the effectiveness and destructive power of artillery. It had become necessary to introduce new methods of fortification to counter this. Such innovations were laid out clearly in numerous treatises published by continental military engineers and theorists during the period. Experience on the Continent had proved that tall, medieval walls of brick and masonry were no match for the new weapons and could easily be breached by iron cannon balls. To command a sufficiently distant horizon in flat terrain, high walls were now more necessary than ever but they now required the protection of additional defences upon which cannon could be mounted and from which enfilade fire could be brought to bear upon attacking forces.

For the besieged, it was vitally important to create defensive barriers to withstand attacks. These ranged from simple chains across roads to continuous circuits of earthen banks and ditches with bastions placed at strategic locations on which to mount batteries of guns, and large forts constructed at intervals. Earth was piled against old masonry to absorb the shock of bombardment, while earth-built outworks were excavated to create a sense of security.



A street defended by a chain, from an engraving published in Francis Grosse's *Military Antiquities*. While chains were used to block roads, it is doubtful if such an elaborate mechanism as this was employed during the Civil War.

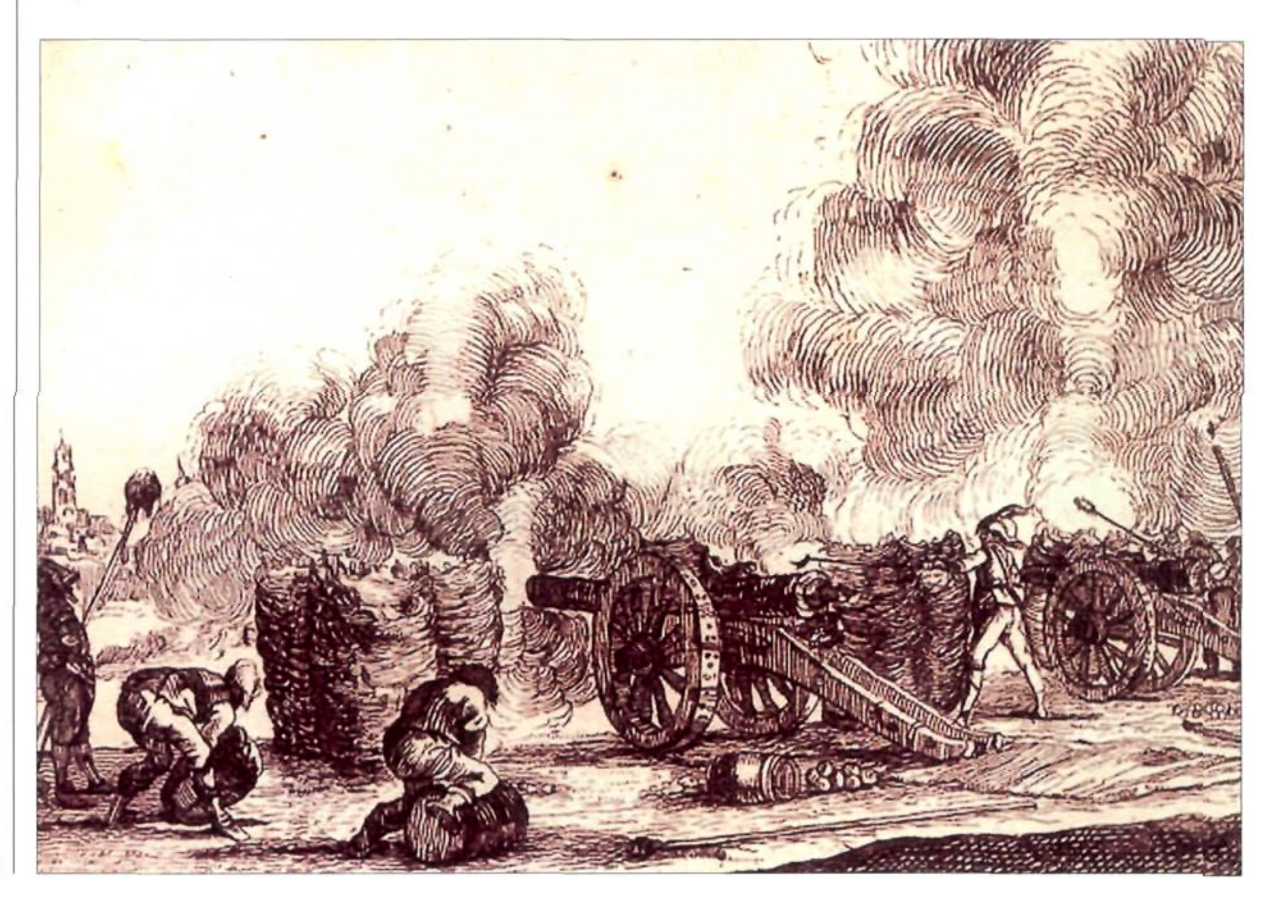
OPPOSITE A selection of sites in the British Isles that were fortified or besieged between 1642 and 1652.

Attacking forces developed their own methods to counter these barriers and turn the balance in favour of the offence. The goal was to isolate the town or stronghold from the surrounding territory and create a stranglehold in the hope of forcing the besieged into submission. To facilitate this, ditches were dug around the place to prohibit any access in or out. These lines in some cases stretched for miles. To protect themselves from attack from the rear, the besieging force might construct an outer perimeter of ditches or trenches defended by musketeers, although these were rarely built during the Civil War. Other trenches would be dug running towards the walls of the place under attack. These approaches enabled the attacking force to move towards the target under some degree of protection. As these lines advanced, batteries would be built to provide cover to the diggers as well as bring firepower to bear upon the walls. This bombardment was directed at one location in order to create a breach that would allow access for the storming troops. In some cases, mining operations would attempt to undermine the walls or allow gunpowder to be detonated under the masonry.

The British Civil Wars were marked by compromises and ad hoc arrangements when it came to fortifications, in contrast to the Continent where more permanent masonry structures were built. Due to the nature of the war, defences were constructed in haste and there was never enough money or manpower for construction or upkeep. Cost cutting measures were introduced and, inevitably, corners were cut. What resulted did not always conform to the standard practices of fortification.

The success or failure of the offensive or defensive measures would determine the length of a siege and its eventual outcome. Christopher Duffy has called the conflict, 'a war of trenches, ramparts, palisades, bombardments and blockades.'

BELOW Cannon in a battery from an engraving by Stefano della Bella, c. 1641. A Civil War battery would have resembled this scene, with gabions serving as protection to the gun crews.




0
50 miles
0
100 km
N
Inverness
Huntly Castle
Aberdeen
Dunnottar Castle
SCOTLAND
Perth
Dundee
Stirling Castle
Leith
Glasgow
Edinburgh
Edinburgh Castle
Berwick
Ayr
Derry
Carrickfergus
Belfast
Enniskillen
Sligo
Newry
Carlisle
Newcastle upon Tyne
Isle of Man
Roscommon
Drogheda
Galway
Galway Fort
Athlone
IRELAND
Dublin
York
Pontefract Castle
Hull
Lathom House
Manchester
Sandal Castle
Wingfield Manor
Hawarden
Chester
Beeston
Nantwich
Lincoln
Limerick
Newark
Nottingham
Stafford
Lichfield Cathedral Close
Shrewsbury
Waterford
Wexford
Bridgnorth
Leicester
Cork
Birmingham
Norwich
Kinsale
WALES
ENGLAND
Worcester
Hereford
Evesham
Newport Pagnell
Cambridge
Carmarthan
Banbury
Severn
Boarstall
Pembroke
Goodrich Castle
Gloucester
Raglan Castle
Woodstock
Oxford
Colchester
Faringdon
Abingdon
Bristol
Donnington Castle
Reading
London
Thames
Wardour Castle
Basing House
Taunton
Farnham
Sherborne
Exeter
Lyme
Portsmouth
Plymouth
Corfe Castle
Dartmouth
Pendennis Castle

Chronology of sieges and battles

Note: Britain during the Civil War used the Julian calendar with the New Year beginning on 25 March. This is termed the Old Style of dating. Modern Britain uses the Gregorian calendar, the New Style, with the New Year beginning on 1 January. Therefore a contemporary date of 10 February 1643 would be 1644 using the modern practice.

1642

July	Hull I
22 August	Charles I raises standard at Nottingham
6 August–7 September	Portsmouth
23 September	Powick Bridge
23 October	Edgehill
29 November–December	Plymouth I
30 November–1 December	Farnham Castle

1643

January	Braddock Down
22 January–February	Plymouth II
February–6 March	Lichfield Close I
27–29 February	Newark I
19 March	Hopton Heath
7–21 April	Lichfield Close II
16 May	Stratton
18 June	Chalgrove
23 June–4 August	Corfe Castle I
13 July	Roundway Down
23–26 July	Bristol I
10 August–5 September	Gloucester
2 September–12 October	Hull II
6 September	Exeter
15 September–21 December	Plymouth III
20 September	Newbury I
11 October	Winceby
7 November–14 November	Basing House I

1644

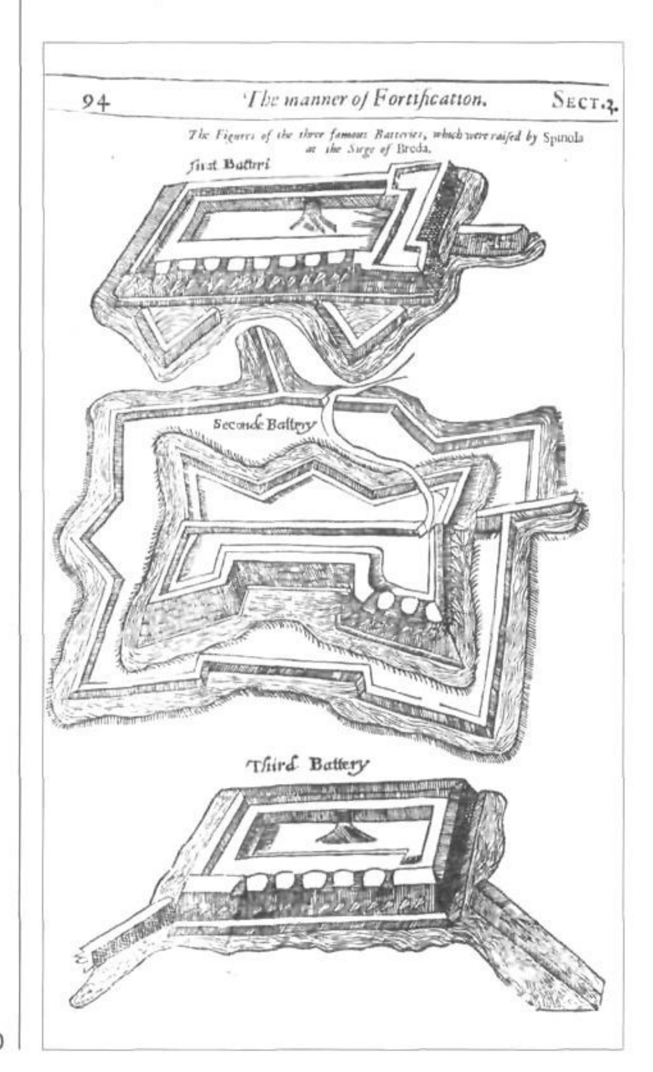
25 January	Nantwich
27 February–27 May	Lathom House I
29 February–21 March	Newark
21 March	Newark II
29 March	Cheriton
20 April–15 June	Lyme
22 April–16 July	York
21 May–4 June	Oxford I
29 June	Cropredy Bridge
2 July	Marston Moor
11 July–20 November	Basing House II
21 July–3 August	Lostwithiel
31 July–9 November	Donnington Castle I
1 September	Tippermuir, Scotland
22 July 1644–December 1645	Lathom House II

28 July–22 October	Newcastle
September–25 June 1645	Carlisle
2 September	Lostwithiel
10–14 September	Plymouth IV
28 October	Newbury II
16 November–17 March 1645	Beeston Castle I
December–19 July 1645	Pontefract Castle I
1645	
9 January–15 March	Plymouth V
2 February	Inverlochy, Scotland
April–November	Beeston Castle II
	Faringdon Castle
9 May	Auldearn, Scotland
17 May–27 February 1646	Corfe Castle II
29 May–30 May	Leicester I
14 June	Naseby
16 June	Leicester II
2 July	Alford, Scotland
10 July	Langport
1–16 August	Sherborne Castle
15 August	Kilsyth, Scotland
23 August–10 September	Bristol II
20 August–14 October	Basing House III
13 September	Philiphaugh, Scotland
19 September–3 February 1646	Chester
24 September	Rowton Heath
4 October–27 February 1646	Corfe Castle III
28 October–9 April 1646	Exeter
15 November 1645–6 May 1646	Newark III
1646	
17 March–17 August	Pendennis Castle
3 May–25 June	Oxford II
21 May–19 July	Worcester
June–31 July	Goodrich Castle
3 June–19 August	Raglan Castle, Wales
5 June	Benburb, Ireland
1648	
22 May–11 July	Pembroke, Wales
13 June–28 August	Colchester
17 July–17 March 1649	Pontefract Castle II
17–18 August 1648	Preston
1649–52	
30 January 1649	Execution of Charles I
2 August	Rathmines, Ireland
3–11 September	Drogheda, Ireland
10–11 October	Wexford, Ireland
23–28 March 1650	Kilkenny, Ireland
27 April	Carbisdale, Scotland
April–18 May	Clonmel, Ireland
3 September	Dunbar, Scotland
4 June–27 October 1651	Limerick, Ireland
August–12 April 1652	Galway, Ireland
3 September 1651	Worcester
24 May 1652	Dunnottar Castle, Scotland

Design and development

> The greater part of the forraigne Fortifications are not for our imitation, because they require a long time to erect them, and more men than we have, or are able to pay, to maintaine and defend them, and more means to finish them, than we have at this present, the meanes of this Nation having beene exhausted, by this unnaturall warre.
> David Papillon, 1646

England at the beginning of the 1640s was primarily an agrarian society functioning around hamlets, small villages and market towns. Several larger places had developed and the majority of these were ports such as London, Bristol, Hull, Plymouth and Portsmouth. Some of the older medieval cities with Roman origins like York, Chester and Winchester were still important as they lay along the lines of the old Roman roads that continued to be the main arteries of communication. While the country could have been considered a unified nation in the first decades of the 17th century, albeit one with religious differences, and had not seen major internal strife since the Lancastrian–Yorkist duel of the 15th century, there was a strong sense of civic pride and independence in the towns combined with a resolute attitude to defend their rights. The only way to do this in time of war was to construct barriers between 'us' and 'them'. Siege warfare since early times was such that the stronger the barricade, the better chance of surviving an attack. This was a simple concept, but often difficult to put into practice.



'Three famous Batteries ... at the Siege of Breda' as depicted in Ward's 1639 treatise, *Animadversions of Warre*. This plate shows the variety of battery forms used in the mid-17th century. Variations on these forms appeared throughout Britain during the Civil Wars.

Contemporary opinion differed concerning the value of fortifications. Some like the king's nephew Prince Rupert felt that fortifications were vital. In a speech published in Oxford in late December 1642, he expounded on the value of strong defences citing examples from the Continent including the recent sieges of Breda and Ostend. Others such as the Parliamentarian general Sir John Meldrum were more sceptical, suggesting that fortified sites invited attack whereas unfortified sites might avoid the bloodshed and be bypassed or occupied peacefully. While this opinion held some element of truth, few adhered to it.

For places like London, the need to construct fortifications was simply stated in a contemporary document in the *Calendar of State Papers*. Entitled 'Reasons for fortifying the City of London by dikes, earthen wall [sic], and bulwarks', it went on to list the following reasons:

> 1st. That it will best secure the City, &c., and defend it from any furious and grand assault by day, but especially by night, when bulwarks, unless united by dike and earthen wall, will not serve, but may be used against us.

> 2nd. That it will be a very great advantage and profit to the City; for whereas in most parts of the kingdom terrible news is weekly spread that Prince Robert [Rupert] with a mighty power is making ready to approach London and will sack it, which is generally thought to be the aim both of the soldiers' malice and avarice. That a complete and sufficient dike, earthen wall, and bulwarks be made, which will render ample recompense [for the trouble]. It will not only discourage the enemies of the City from warlike and violent approaches, but will encourage our friends to frequent her and to come with their estates to inhabit in her by multitudes, whereby she will grow mighty, famous and rich even in time of wars ... besides the aid of strangers by weekly contributions and the increase of trading.

The outbreak of hostilities in the autumn of 1642 provided little time for communities to construct defences reflecting the latest continental principles. Few places possessed anything resembling fortifications that could be considered modern by mid-17th-century standards, and the citizens had to scramble quickly to build some kind of defensive barriers to ward off the marauding bands of partisan forces that were springing up around England. Not since the Spanish Armada of 1588 had the country faced a threat of military action, although some towns had put their fortifications in order due to the invasion of the Scots in 1640. Fearing such an attack, the ancient city of York had made preparations for a possible siege. One writer described 'many Bulwarks raised', while another reported a visit by Charles I to the city on 31 August 1640: 'The king ... rode about the city, accompanied with the Marquis of Hamilton, several general officers, some aldermen and citizens, and with pickaxes, spades and shovels marked out several intrenchments and fortifications.'

That England had enjoyed a long period of political stability meant that she lagged behind her continental neighbours in terms of fortification techniques. Furthermore, it has been suggested that the Tudor monarchs reduced the strength of the military forces in order to maintain the status quo. If there were an external threat, the navy would be available. There would be no need for well-defended towns and castles.

In the century prior to the Civil War, few places in England possessed fortifications built specifically for defence against artillery. The exceptions were along the coast or at the mouths of the strategic rivers, but these were rather antiquated. The only fortifications that could be considered modern were at Plymouth, Portsmouth and Berwick-upon-Tweed. Elsewhere there were a few forts such as Tilbury on the Thames, and blockhouses like Eynemouth Fort, Northumberland, and Landguard Fort, Suffolk. Portsmouth had a reasonable defensive system based on a simple earth wall and external ditch built in the medieval period. This had evolved into a formidable defence by the 16th century consisting of masonry walls surmounted by round bastions at each corner; these were remodelled later in the century. When the Governor of Portsmouth, General George Goring, declared for the king in 1642, it caused the House of Commons much concern as the port was considered 'the strongest and best fortified town in the kingdom', as the Earl of Clarendon described it.

Inland, any defences that did exist were mainly old medieval walled towns often built on Roman

Soldiers climbing a wall, from *Theatro Militare* of 1617. Medieval walls presented considerable obstacles and besieging forces did everything they could to penetrate them, although it is doubtful if attacking troops could gain access as easily as the figures in this engraving.



foundations; or comparatively decayed castles which, as things turned out, could be put into a very efficient state of defence. When war broke out, few towns retained their ancient walls in anything approaching perfect condition, and a number had lost them altogether. One observer wrote in 1592: 'Towards night, we reached Maidenhead, a beautiful large place or town, but which like all other English towns is without walls.' At Leicester most of the medieval stone walls had gone; mounds and ditches were all that remained. The Parliamentarian soldier Nehemiah Wharton, a subaltern officer in the Earl of Essex's army, described the condition of various towns in the late summer and autumn of 1642. He noted that the walls of Northampton were 'miserably ruined', while those of Worcester were in disrepair, the bulwarks being 'much decayed'.

Some places were in a better state. The walls of Lincoln were thought to rival those of London in height, and Wharton commented that the walls of Coventry were constructed 'all of free stone. It hath four strong gates, strong battlements, stored with towers, bulwarks, courts of guards, and other necessaries'. They covered an area of three miles and were considered quite formidable. On 30 September 1642, he described Hereford as being 'environed with a strong wall, better than any I have seen before; with five gates'.

A 16th-century engraving depicting one of the forts around Portsmouth. Circular towers were popular in Tudor England and several were constructed along the southern coast. However, round structures could not provide cover for every position, unlike angular bastioned works.

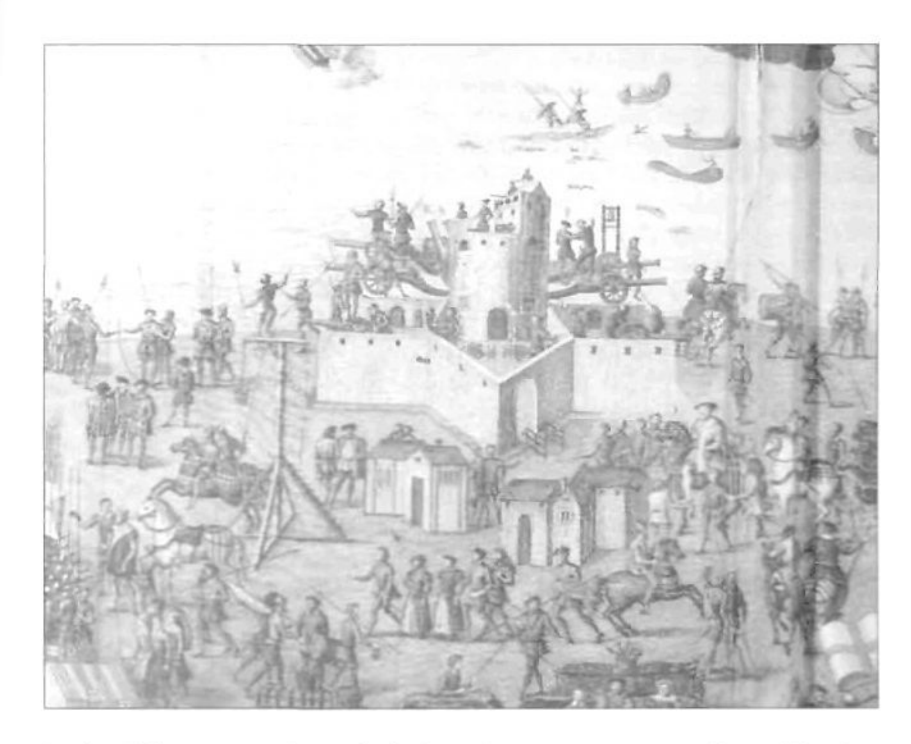
As for castles, several important structures had been constructed along the south and east coast during the reign of Henry VIII, mainly out of fear of attack from Catholic Spain and France over the break with Rome. Major ports like Hull were fortified and navigable rivers along the south coast were defended with small, circular castles such as Pendennis and St. Mawes at the mouth of the River Fal, Cornwall. New castles were built at various places, including Deal, Gravesend and Walmer in Kent, and Hurst and Sandgate around Portsmouth and the Solent. Later, during the reign of Elizabeth I, several were refortified for fear of, and also in response to, an attack from Spain. Pendennis, and Carisbrooke on the Isle of Wight are good examples of fortifications that date from this period.



Nonetheless, many of the older castles along the south coast had been neglected as the writer of a pamphlet entitled *Englands safety in Navie and Fortifications* noted in 1642. The castles of the ancient Cinque Ports were described as 'much decayed in their several Magazens of Armes ... of late yeares have wanted much provision of abiliaments for Warre, or warlike defence'. Part of the north wall of Dover Castle had collapsed and much of the lead roof had gone, and the fortifications of all the castles were considered weak.

Once civil strife began, the majority of towns and castles had to be refortified to meet the challenge from artillery. As tall, medieval walls were considered vulnerable to artillery, it was vital that low, earthen defences be constructed beyond the walls to counter any threat. These could provide platforms for artillery and musketeers to drive any attackers away from the walls.

Many towns that might be viewed today as minor places were strategically important



The representation of a coastal fort on the Solent in the 16th century. While this is dominated by a tall, circular tower, an angular lower defence is clearly visible.

in the 17th century. Control of the main routes was a vital consideration and this explains why a town like Newark-on-Trent, Nottinghamshire, was so important to defend as it sits at an important location astride the Great North Road and the River Trent. Similarly, control of Newport Pagnell, Buckinghamshire, was critical during the war because it was considered to be on the frontier of the important Parliamentarian Eastern Association. The Committee of Both Kingdoms, the governing body for the operations of Parliamentarian armies, wrote to the Association at Cambridge in October 1644 that 'should it [Newport] be lost by any defeat of either fortification or garrison, would prove, being in the enemy's hands, a very bad neighbour to the whole Association'. Consequently money was raised in the counties of Norfolk, Suffolk, Cambridgeshire and Huntingdonshire for the 'workes' at the town.

As control of the shipping routes was also a significant factor, particularly for the Royalists, who relied heavily upon supplies from the Continent as the conflict wore on, possession of the major ports was paramount, hence the fortification of Bristol, Plymouth, Hull and Liverpool by Parliament at the outset, and later the refortification of Bristol and planned works at Liverpool after their capture by the Royalists. The capitals of the respective forces – Oxford for the Royalists and London for the Parliamentarians – received the most attention when it came to fortification.

Expenditure

Numerous records survive detailing the amounts spent on constructing fortifications during the Civil War. In the majority of cases, the costs were borne by the citizens of the various towns, although money was forthcoming from Parliament in cases where places were considered of national importance such as Reading and Weymouth. In Canterbury, money was raised by subscription and £200 was issued by the city treasurer on account for fortifying the place in November 1642. At York, £12 was received weekly from the various parishes in the city 'for making bulwarks'.

London Corporation had the authority from Parliament to tax the suburbs to raise money for the forts; £12,000 was advanced as early as 1643. A Committee of Fortifications was responsible for overseeing the works. In December 1644,

Parliament passed an ordinance 'for the raising of money to pay the charge of the fortifications and guards ... for the safety of the City, and parts adjacent, within the Lines of Communication'. The City had to raise £5,482 4s. 3d., Westminster £616 10s. 8½d., Tower Hamlets £419 4s. 7d. and Southwark £369 18s 5¼d. per month for six months, back dated to November. This was done by a weekly assessment levied on tenants and landlords. If this was not done, the ordinance outlined the steps that would be taken towards delinquents. While the corporation was eager to raise the money, it was not always forthcoming in paying its bills as the city records contain several complaints for late payment. For instance John Young, a freemason, was still owed £3 in March 1646 for repairing the stonework at the breach by the Pindar of Wakefield Fort, a bill submitted 18 months earlier. Two carpenters, Bevis Piggott and Henry Glydd, were owed money for work done at several forts, while the merchant John Freeman was owed £33 for supplying fir timber to be used as palisades on the London fortifications.

In Cambridge, the committee for the defence of the town issued an appeal that was read in all the churches on Sunday, 12 March 1642/3:

> Whereas we have been enforced, by apparent ground of approaching danger to begin to fortify the town of Cambridge, for preventing the Enemy's inroad, and the better to maintain the peace of this County ... now standing in need of your further assistance to the perfecting of the said fortifications, which will cost at least two thousand pounds ... we desire the free will offering of a liberal contribution from you.

That money was forthcoming and the defences built is suggested by a report sent to Parliament by the governor of the town on 12 July 1643 stating that 'our town and castle are now very strongly fortified being encompassed with Breast Works and Bulwarks'. However, a letter dated 7 October 1643, written from Cambridge Castle contradicts this by saying 'our ditch goes very slowly'. The ancient cathedral city of Salisbury asked for the loan of money in August 1642 towards the fortifying of the place 'either by trenches, chains or otherwise'.

At Nottingham, finances during 1645 continued to present difficulties due to the 'great charges the town hath lately been at about the bulwarks and other such things'. Some towns, such as Boston in Lincolnshire, ended up in arrears after building fortifications and applied to Parliament for financial help. In fact, the construction project at Boston had been so extensive that the resulting fortifications were considered unwieldy and, as the town had seen little action, the earthworks began to deteriorate, as the Committee of Both Kingdoms reported in August 1645:

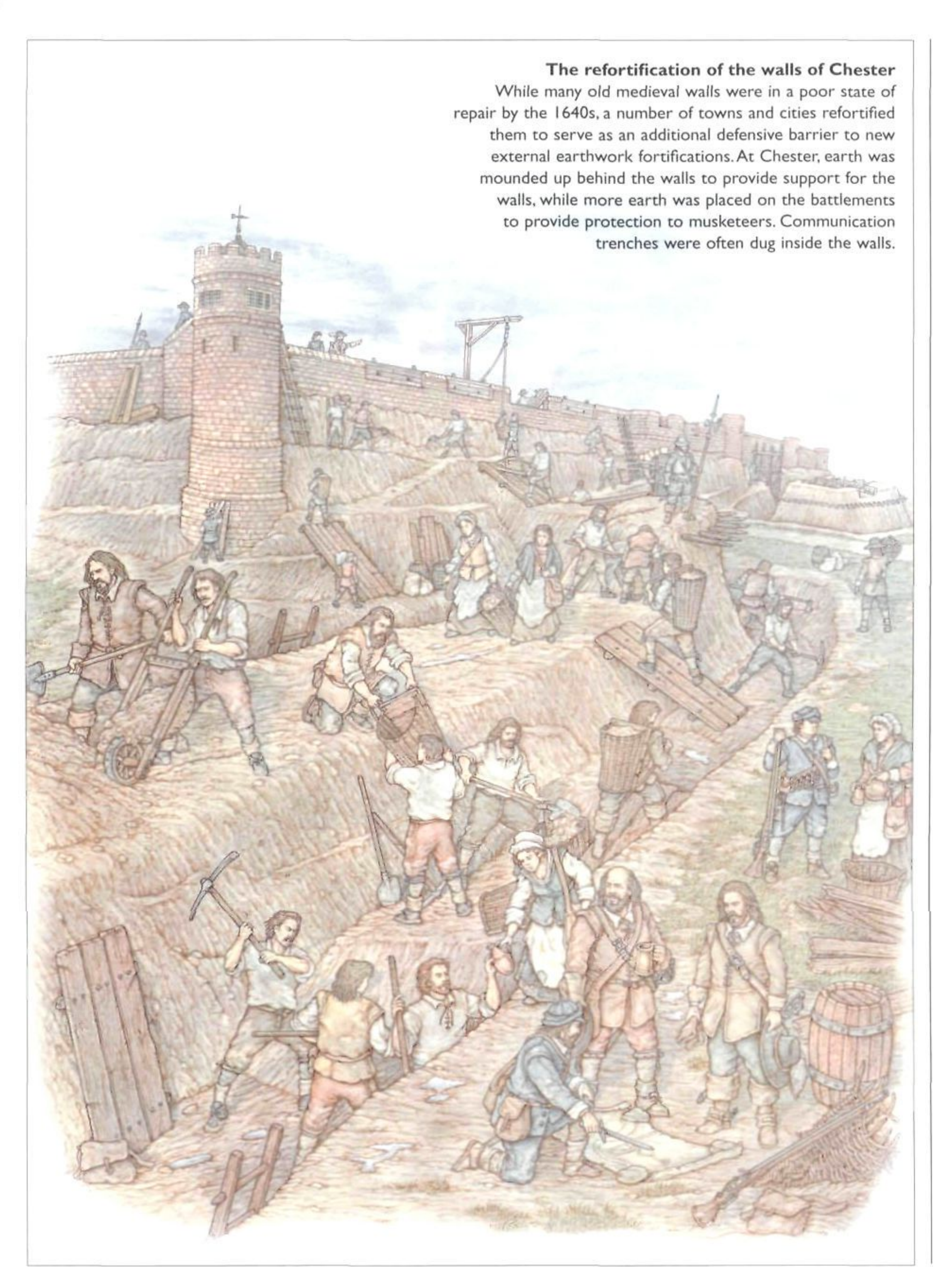
> The fortifications are very large and irregular, so as not to be defensible but by a very great garrison if it should be attempted by an enemy, besides that the works are also at present in very great decay.

The Committee urged the commander of the garrison to:

> cause the works thereof to be viewed by some skilful engineer, that they may be both contracted and reduced to such regularity and artificial perfection as to be defensible with a small force.

On 11 October 1642, the council of Gloucester ordered that:

> two greate guilt bowles with covers, one guilt tankard, one silver cann, one greate silver beare bowle and one lesser silver bowle, fower old maces, and one old seale of mayoralty, being plate belonging to the Chamber of this city, shalbe forthwith sould ... and the money to be disposed of toward the charge for the fortifications of this city.



The refortification of the walls of Chester

While many old medieval walls were in a poor state of repair by the 1640s, a number of towns and cities refortified them to serve as an additional defensive barrier to new external earthwork fortifications. At Chester, earth was mounded up behind the walls to provide support for the walls, while more earth was placed on the battlements to provide protection to musketeers. Communication trenches were often dug inside the walls.

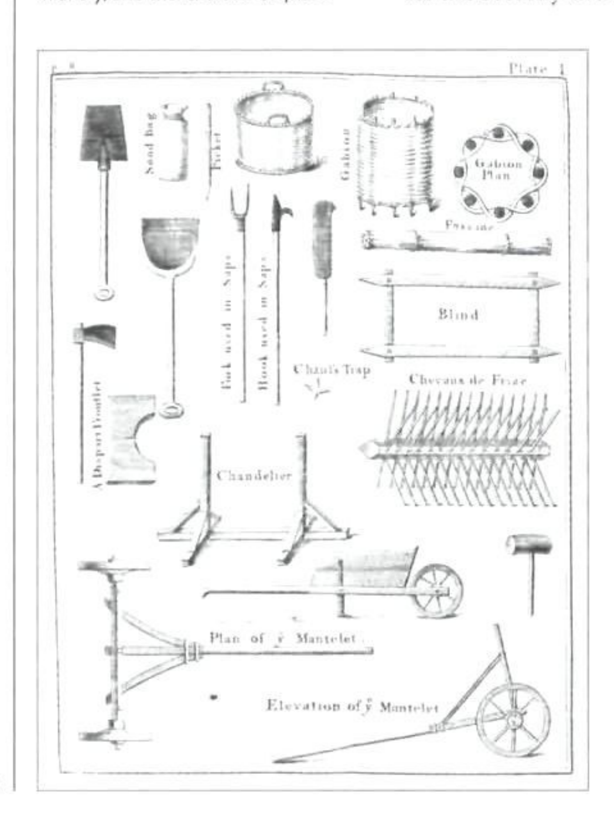
Plate was similarly sold at Plymouth, while Oxford taxed its colleges: on 18 January 1643, the city ordered a weekly contribution of £40 from the University for 20 weeks, to be levied on the colleges and halls, towards 'the great and chargeable design of new fortifying Oxford against the Rebels'.

In the case of Barnstaple, Devon, Parliament voted £200 to the mayor for the defence of the town on 23 January 1643. A 'Summarie of Disbursements made by the Inhabitants ... in Plate and Money for Fortifying the Said towne' includes the following expenditures:

In disbursements for Materials and Wages to build the Fort in which were mounted 28 pieces of ordnance	£1,120 0s. 0d.
For entrenching the town	£ 450 0s. 0d.
In Fortifying the Castle, building 3 defensible Gates and making 16 platforms	£ 66. 0s. 0d.

The corporation of King's Lynn, Norfolk, petitioned the House of Commons for ten pieces of ordnance and for an allowance of £500 in order that the fortifications might be finished in December 1642, even before the town had taken sides. Like other communities it had to pay a weekly assessment determined by Parliament to pay for supplies, soldiers and other essentials, and the corporation felt justified in applying for this grant to finish the defences.

Fearing a Royalist attack from Cornwall, the Commons issued a series of orders to the Devon Committee to prepare Exeter for defence. It authorised £300 of public funds for city fortifications and repairs to the castle, and gave the mayor and deputy-lieutenants full power to organise resistance to any Royalist threat. The same was true elsewhere in the country and there is considerable documentary evidence describing the efforts of individual towns to defend themselves. At Chichester, Sussex, '[Parliament] gave full Power and Authority to the said Inhabitants, to make any such Fortifications in or about the City, for the Security thereof, as they in their Discretions should think fit.'



Tools used in fortification, from John Muller's 1747 treatise, *Attack and defence of fortified places.* Blinds and mantelets provided cover for digging, while gabions protected the cannon. Defensive features include the 'chauss trap', a metal spiked implement to hinder horse and infantry, and the '*chevaux de frise*'.

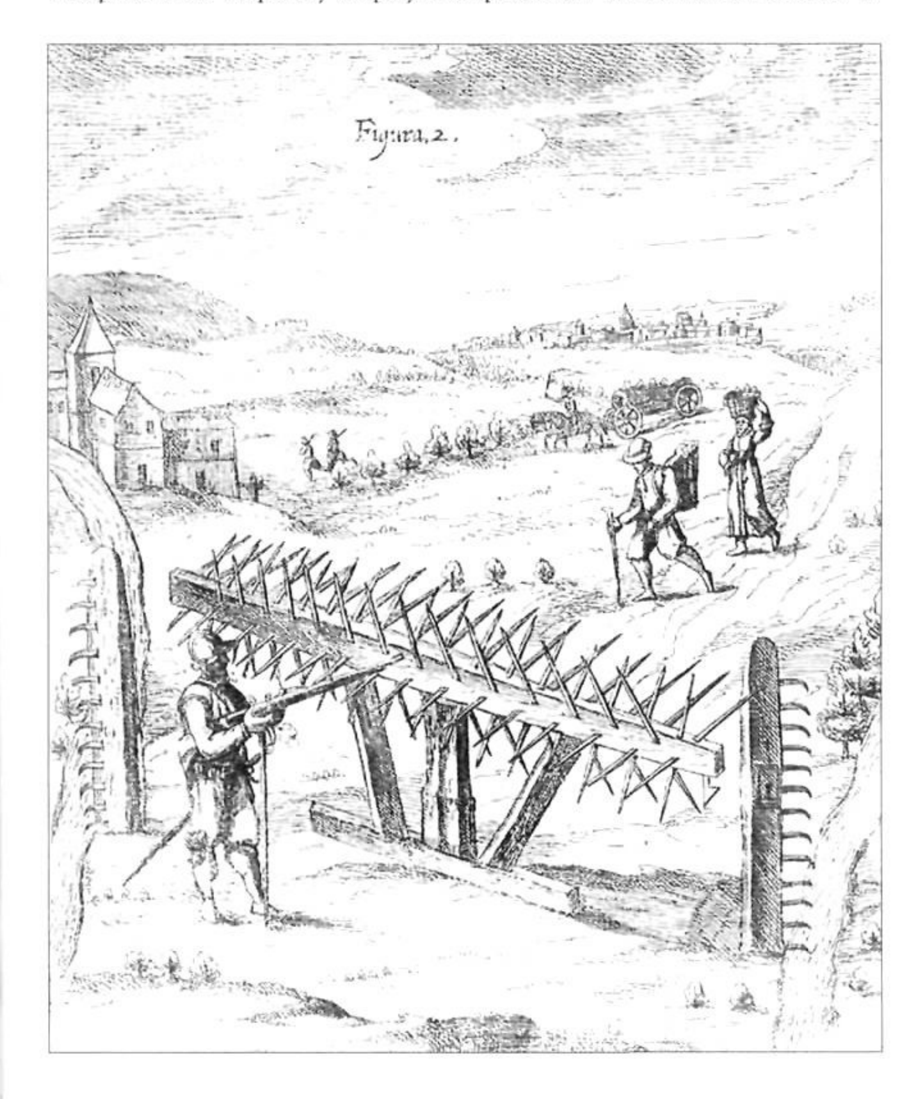
Some idea of what the money was spent on can be gleaned from the records of Exeter. The account books state that a total of £4,374 11s. 3½d. was spent on fortifications between November 1642 and 31 August 1643. This was for:

> carriage of Turf, lime, sand, stones, earth, clay, straw, slate, mortar and helingstones, sawing of planks and timber, felling of trees, Muandes, Basketts, Dealboards, tools, shovels, wheelbarrows, spukes [sic] and other iron-work, work done at various places, for pioneers, for a rope at the castle well and the cleaning of it, work on the castle walls, for payment to various women, for carriage of stones to the Citty walls ... willowes to bind faggots for fortification ... for demolishing howses, making and grindinge of Tooles, Deale Boardes for platforms, for Laughts and Nailes, for service for fireinge on of the Enemies works ... for drawing downe of Theight howses that endangered ye Citty ... for filling and Leavelling the Trench ... for carrying of water, for making of Salt Peter, for repairing of Boates, for making Handmills ... for slightinge the hedges ... carrying of wooll to make Batteryes, for seventeene packs of Wools ... used for the Baracadoes and fences uppon the bridge and other places for defence of the Citty ... for tymber to make Carraiges for the greate Gunns, Turnepikes, platforms, drawbridges, Caskes and other works.

Construction

Building fortifications could take anywhere from a few days to several weeks. Most offensive operations involved rapid construction of batteries and trenches while the position was under fire. Numerous accounts speak of enemy siegeworks being built in a matter of hours although some of the large forts built could take much longer. Town defences in many cases were an ongoing concern and great care was taken to keep them in good order as they were all that stood between the enemy and safety. Fines could be levied for damage to them.

Individual accounts exist of the building of fortifications during the Civil War and some of these appear below. In general, the construction of a fortification involved marking out the sites to be built using pegs and string, earth-moving on a large scale, mounding-up soil and mud into a variety of structures, excavating ditches and trenches, cutting planking, sharpening poles into palisades and storm poles and making wicker baskets and filling them with earth. Wooden posts with sharpened horizontal pieces were placed on roads to function as turnpikes, and a variety of small sharpened iron and wooden implements were made to hinder the movement of attacking cavalry and infantry. Turf was very important as a means of binding the earth together and limiting erosion, and there are many accounts of grass sods being cut for placing on the earthworks. In some cases, masonry structures were built, and stone and brick were added to the earthworks. Woolpacks were frequently employed as protection for cannon in batteries as



Various structures were used to fortify or block-off roads during the Civil War. Turnpikes were used in addition to other forms. This engraving from *Theatro Militare* of 1617 shows one example of a fortified barrier.

they could absorb enemy shot. Before ground was broken, existing buildings were often demolished to make space or remove potential cover for attacking forces. Similarly hedges were often cut down.

A range of tools was employed, spades and axes being the most common, and wheelbarrows were the means of moving earth from one place to another. In fact, such tools were as important as weapons in this war, and accounts of attacks and sieges speak of tools being captured. An order issued on 15 June 1644 by the Royalist Lord Hopton requested that 60 labourers meet at 7 o'clock the next Thursday 'with good and serviceable spades and pickaxes', to work on the defences of Fort Royal near Brandon Hill, Bristol. At Gloucester, it was agreed that 'there shal be 20 or 30 pickaxes and 20 or 30 spades and shovells and some ten or 12 wheele barrows presently provided to helpe to make baracadoes by digging of ditches to prevente horses entrance into this city'.

When places were captured, fortifications were often slighted or rebuilt depending on the need. 'We are slighting the works here [Reading]', noted one Royalist in May 1644, 'and by Thursday night we shall make them unserviceable for the enemy if he should settle himself here.' In September of the same year, we read of Parliament dispatching an engineer named Culembourg to examine the remains of the defences with a view to rebuilding them, and the following month, the Committee of Both Kingdoms congratulated the governor and the committee of the town 'for their care and pains in fortifying the town'.

The Royalists drastically rebuilt the Parliamentarian fortifications at Bristol after they were taken, and extensive plans were drawn up for Liverpool but the work was never completed. Bernard de Gomme, Engineer General of the Royalist army, submitted a report in 1645 on the condition of the line of Parliamentarian fortifications about Bristol and this provides a glimpse of the scale of some defences of the period:

> The line, generally, was three feet thick.
> The height of it, five feet, where it was highest.
> The graff [ditch] commonly six feet broad, and, where it was widest, but seven.
> The depth, in most parts, four feet, and five where deepest.
> Between Prior-hill Fort, Stokes Croft-gate, and beyond the little river, towards Lafford's-gate, in which places the enemy entered, not five feet high.
> The graff five feet broad, and all that part of the line much decayed.
> The ditch of the great fort, on the right hand, the gate before the face of the bulwark, was not four feet deep, and eighteen feet broad, so that horses did go up and down into it.
> The highest work of the fort was not twelve feet high, and the curtains but ten.
> Within one hundred feet of the fort, there was a deep hollow way, where the enemy might lodge what numbers he pleased, and might be in the graff the first night, and in that part the fort was minable.
> Brandon-hill fort was about twelve feet above the level of the great fort; and that being not able to make any long resistance, the enemy gaining it, would command the other.
> The hedges and ditches, without the line, were neither cut nor leveled, so that they lodged their men securely near our works, at their first approach.

For the duration of the war, thousands of civilians and soldiers toiled on the construction and upkeep of fortifications and siegeworks. While the majority of town defences were made by civilians under military supervision, siegeworks were constructed by soldiers. Work on defences was often mandatory and failure to appear for work could result in fines or even death, as Prince Maurice mandated for Worcester in 1645. Even the *Military Orders and Articles established*



by His Majesty printed for the Royalist army in 1643 included the stipulation that 'No common Souldiere shall think himselfe too good, or refuse to worke upon any peece of fortification, or other place where they shall be Commanded for Our service'. The work in the towns disrupted daily life, caused financial hardships for individual parishes and towns, destroyed houses and fields, ruined the economy and disrupted the livelihoods of many, and was a source of friction within the civilian population.

Detail from a Spanish engraving of 1579 showing troops performing various tasks involved in building siegeworks. Some men dig with shovels and spades, others move earth on stretchers and wheelbarrows, while several mark out a battery with poles and wicker fencing.

Principles of defence

> This Art was invented at the first, to preserve a handfull of men against the oppression and cruelty of a multitude; for according to the rules of it, a Garison [sic] Town is not sufficiently fortified, except one hundred men within it, can oppose a thousand assailants without; and a thousand, ten thousand, that is, one defendant against ten assailants; but it is with this caution, that the place besieged be provided with a competent number of men, ordnance, ammunition, arms, victuals, and a Magazine furnished with all manner of fire-works, mortar-pieces, engines of warre, ladders, and pioneers tools; for if any of these necessaries be wanting, this Garison [sic] will not subsist against a lesser number than is here spoken of.

These words written by the Civil War engineer David Papillon begin chapter four, 'Of the true use of the Art of Fortification', of his *Practicall Abstract* published in London in January 1645/6. It was written from experience by one who had observed Civil War sieges and fortification first-hand. The author emphasised the importance and value of good defensive fortifications in a war where defence was of the utmost importance. During the conflict, each town and city went to great lengths to create defences in depth that could hold the enemy off until relief came, although many committees charged with this task failed to live up to this aim. A 'siege mentality' developed as each community was forced to fend for itself. If professional engineers like Papillon were available, so much the better, but this was not always the case. Papillon himself criticised the fortifications of Northampton for being poorly designed and not employing the most current forms.

The continental conflicts earlier in the 17th century had provided the opportunity for some Britons to gain experience in the art of war. This experience would be put to good use during the Civil War where professional soldiers were in short supply. Several veterans had written treatises on 'modern' warfare based on their observations on the Continent, or translated foreign studies, and these manuals became important tools not only for the organisation of field forces, but also for laying down the principles for attack and defence of fortified places. However, such volumes published in small print runs had limited circulation beyond London and the university towns. Complex artillery fortifications were the exception rather than the rule during the war and many towns and garrisons defended themselves in whatever ways they could without the luxury of time, money, or professional advice. The resulting defences did not always conform to the standard systems of fortifications of the day. In most cases, the defenders had to make do with what they had and what they knew if anything. That said, there is enough evidence from contemporary plans of defences and surviving sites to suggest at least a passing knowledge of bastioned fortifications on the part of defenders.

16th-century fortification theory

It was in 16th-century Europe that the science of artillery fortification matured fully to counter the dramatic increase in firepower afforded by the development of gunpowder. The devastating effect of artillery against tall medieval walls and towers had convinced military practitioners that new forms of defence were needed to offset this offensive power. The resulting forms developed in Italy in the 1490s consisted of much lower walls with gun-ports and platforms, and with four-sided angular projections at the corners at an acute angle to the curtain.



A typical siege scene of the late-16th century showing the operations of the Spanish against the Dutch city of Grave in 1586. In the centre is a large eight-gun battery firing from behind gabions. Storm poles protrude from the embankment of the battery.

Cannon mounted on these enabled flanking fire from each bastion to cover all approaches leaving no 'dead ground', which inevitably occurred with round projections.

17th-century theories of defence and attack

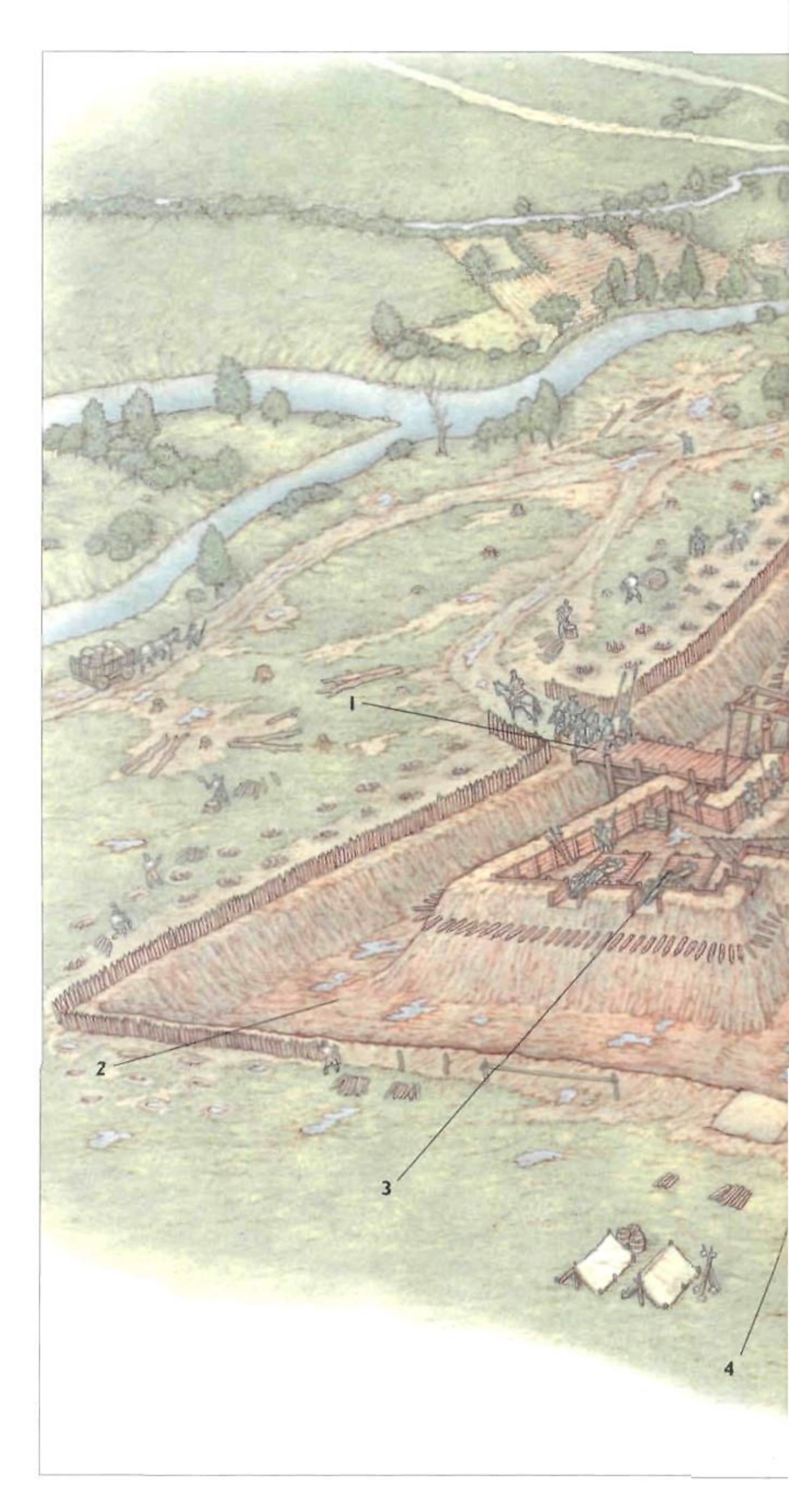
While military theorists had expounded on the concepts of attack and defence in numerous treatises, their theories presented the ideal forms and did not consider the practicality of many of the methods presented. Furthermore, their ideas for building elaborate stone defences failed to take into account the time involved in construction and the costs. As the Civil War was to prove, fortifications built hastily did not always reflect the standard principles of defence. Nonetheless, it is useful to examine the various theories put forth in contemporary manuals, particularly those that might have been available to the belligerents in the war.

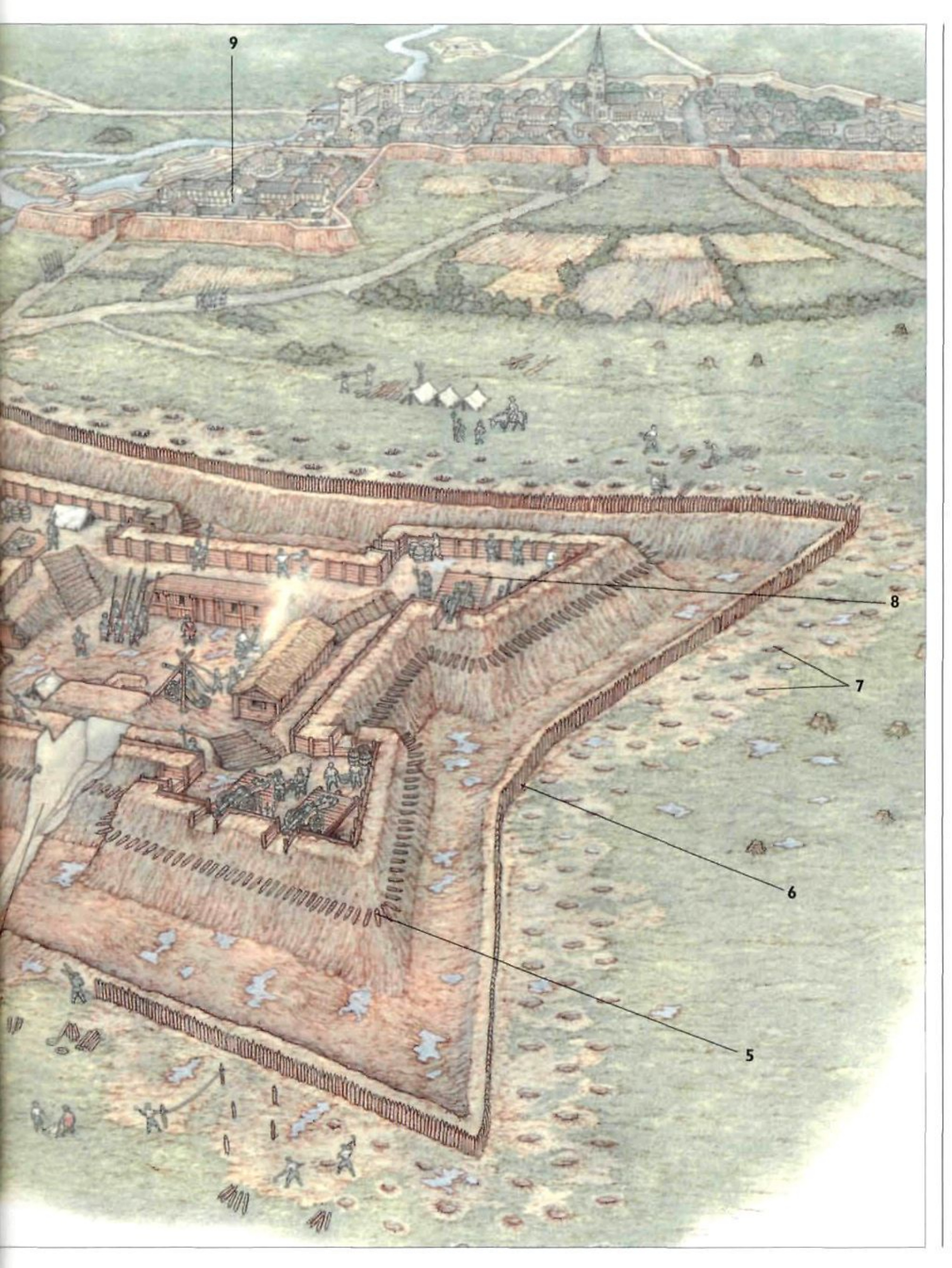
The majority of manuals dealing with the subject of defence and attack were written on the Continent by military engineers schooled in the wars of the Low Countries and the Thirty Years War, collectively known as the Eighty Years War (1566–1648). As so much of the fighting occurred in the Netherlands, it was not surprising that Dutch military engineers developed their own principles of siegecraft modelled on the Italian ideas but fashioned in a way that met the immediate contingencies thrust upon them in time of war. Having the luxuries neither of time nor money to build elaborate masonry fortifications, they fabricated their own bastioned fortifications built of earth. Contemporary authors noted that earthen ramparts were cheap and easy to build and offered

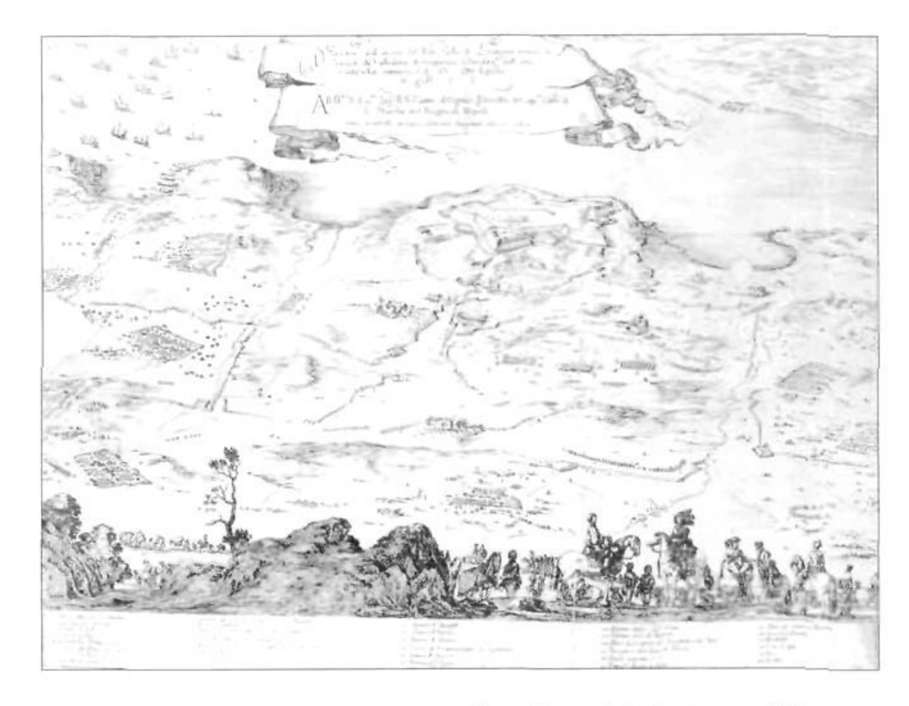
A view of the Queen's Sconce outside Newark-on-Trent

Reconstruction of the Queen's Sconce at Newark-on-Trent, Nottinghamshire, as it might have appeared during the Civil War. This was a typical bastioned fort of the period designed to create intersecting or flanking lines of fire against any attackers. Built of earth, it could easily absorb shot while its angled design could deflect cannon balls. It probably had a palisade and an earthen parapet as well as storm poles for added protection. Such forts may have contained wooden buildings to store ammunition and provide storage.

1 Drawbridge
2 Ditch
3 Bastion mounting canon
4 Section through rampart showing firing step and ditch
5 Storm poles
6 Palisade
7 Pitfalls
8 Bastion
9 Newark-on-Trent




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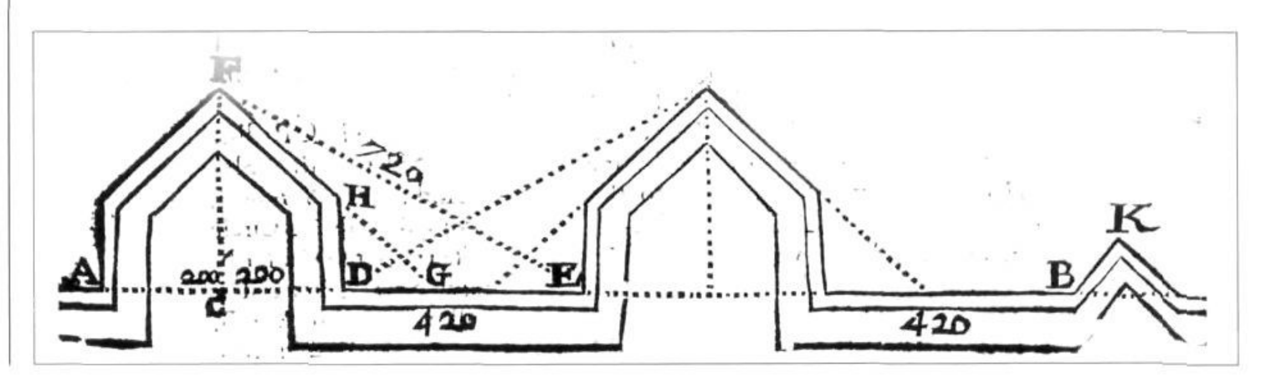


A perspective view of the siege operations in 1650 before the fortress of Longone, Italy. Many Civil War scenes would have resembled this although not quite on the same scale. Various fortified camps and entrenchments built by the besieging forces can be seen.

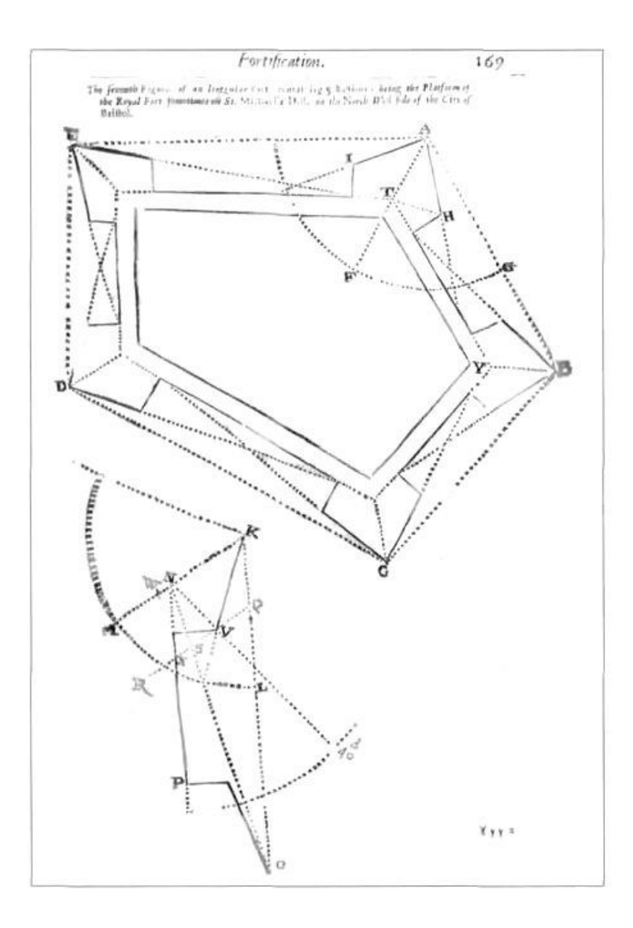
almost unlimited resistance against artillery fire, whilst being as difficult to climb as masonry walls when suitably reinforced with palisades.

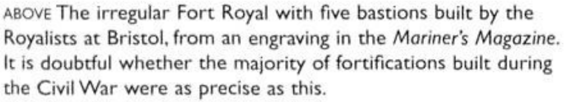
One other departure from the Italian system was that the Dutch always built the flanks of the bastions perpendicular to the curtain, whilst the salient angle of the bastion itself never exceeded 90°. The line of defence from one bastion to another was never longer than 240 yards if it was designed for musket defence, but could be longer if it was defended by cannon.

These concepts were fully embraced by domestic military writers, and several laid the theoretical groundwork for artillery fortification by providing plans and outlines detailing the relevant principles and the variety of structures. There was a growing interest in the science of warfare and it has been estimated that around 60 volumes detailing the ideal conduct of war were published in English between 1600 and 1625, while an additional 33 appeared in the seven years prior to the outbreak of war in England in 1642. Some were direct translations of continental works while others were based on direct observation. Among the latter was Henry Hexham's *Principles of the Art Militarie Practiced in the Warres of the United Netherlands* published in 1637 and re-issued in 1642, and Robert Ward's *Animadversions of Warre,* which appeared in 1639. Hexham (c. 1585–1650) had been in the service of Sir Francis Vere from 1601 to 1606, and had risen to quartermaster with Vere and later with the Royalist commander George Goring. He had seen action in various battles including the operations at Nieuport in Flanders.



'How to Fortifie a long Curtain with Bulwarks, or a straight Town Wall', from an engraving published in the *Mariner's Magazine.* This was the standard form adopted by many towns possessing walls, employing the Dutch method of flanking walls perpendicular to the curtain.





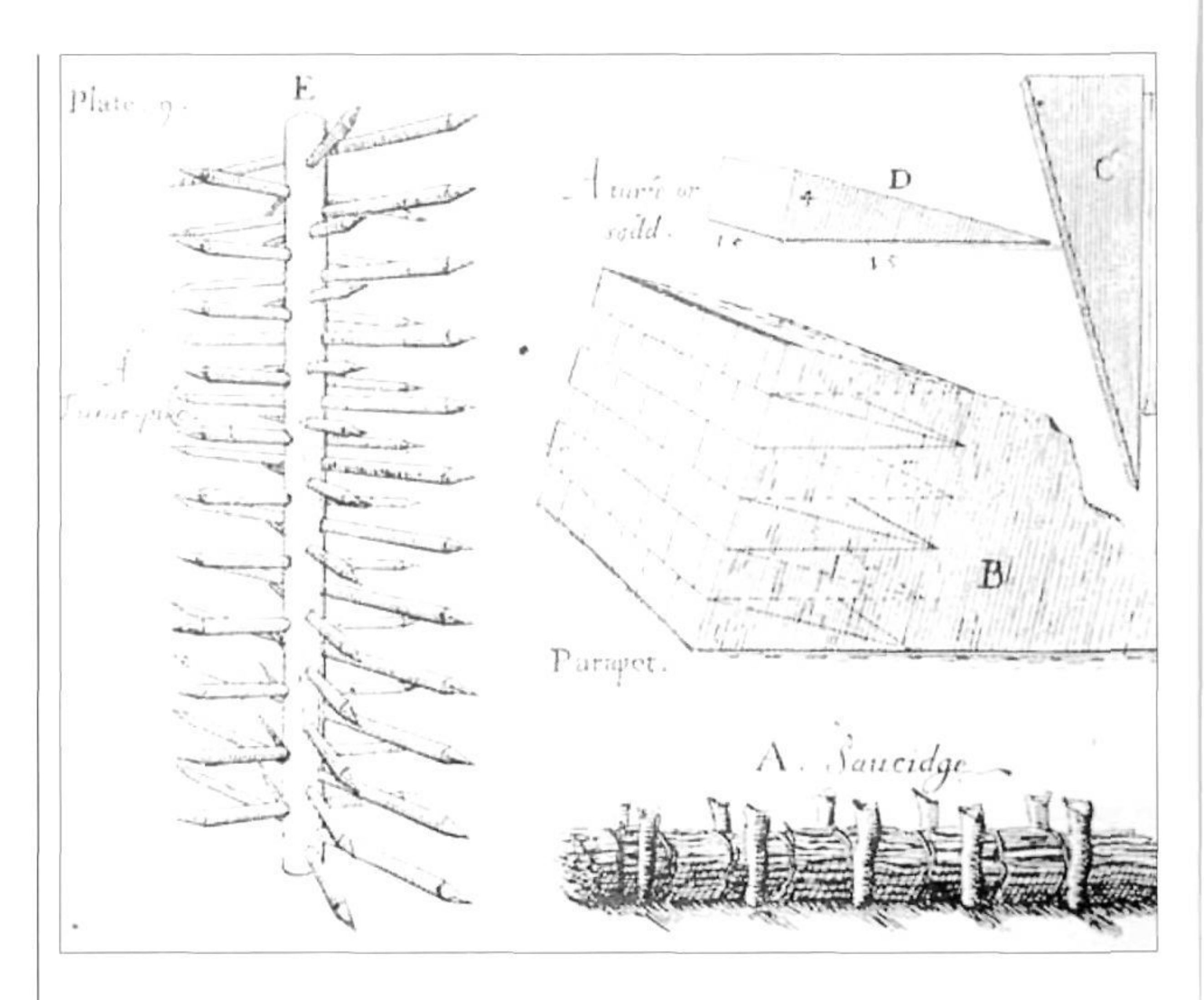
ABOVE The irregular Fort Royal with five bastions built by the Royalists at Bristol, from an engraving in the *Mariner's Magazine*. It is doubtful whether the majority of fortifications built during the Civil War were as precise as this.



ABOVE Title page of *Animadversions of Warre* by Robert Ward. Manuals such as this provided the basic principles for attack and defence in 17th-century England and were often based on studies published on the Continent.

Other works that borrowed heavily from these earlier tomes appeared during the war and quoted examples from the conflict to illustrate arguments. Such examples were *A Practicall Abstract of the Arts of Fortification and Assailing* by David Papillon published in London in 1645/6, Ball's *Propositions of Fortifications* of 1642 and Nicholas Stone's *Enchiridon of Fortification* of 1645. The title page of Stone's work noted the following details about the work. It would demonstrate 'both by Rule, and Figure, (as well Mathematically by exact Calculations, as Practically) [how] to fortify any Body, either Regular, or Irregular. How to runner Approaches, to pierce through a Counterscarpe, to make galleries over a Mote, to spring a myne, &c'. Mathematical principles permeated all such fortification studies, setting down the correct angles and length of walls, and the optimum area for each kind of structure.

Whether such works were in wide circulation during the war cannot be determined but an interesting bookseller's account for books supplied to Colonel Edward Harley in Cambridge up to 14 March 1641/2 includes Hexham's volume and John Cruso's camp-building manual, *Castramentation, Or, The Measuring out of the Quarters for the Encamping of an Army*. Some fortifications may have been built from memories of continental forms. One cannot underestimate, however, the knowledge and awareness of artillery fortification among the educated classes in England of the 1640s and the fact that many places constructed defences bearing some resemblance to continental principles suggests more than just mere guesswork.



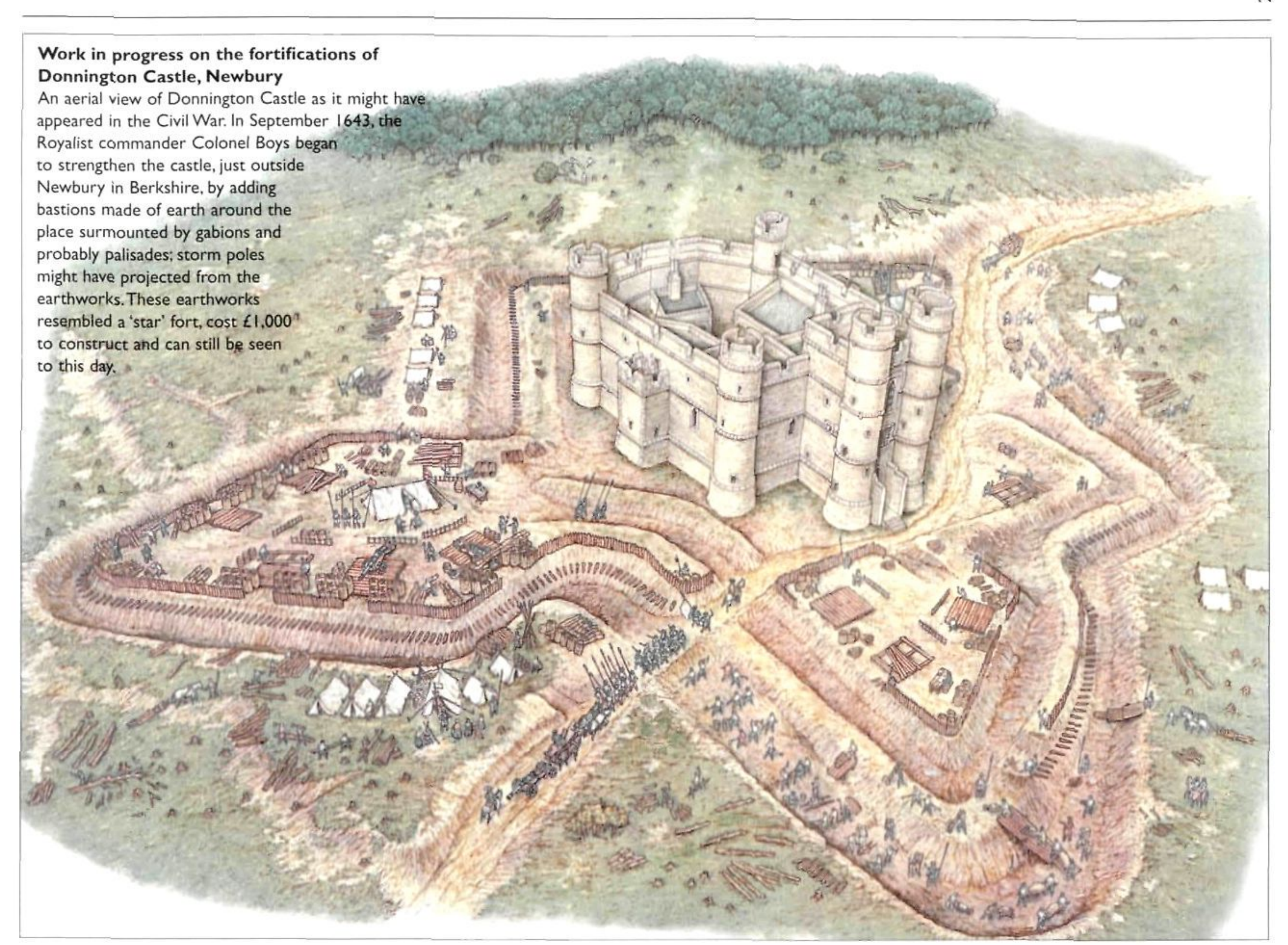
A plate from *Enchiridon of Fortification* by Nicholas Stone published in 1645 illustrating a design for a vertical turnpike and the method for stacking turves to form a rampart; a 'saucidge' was a bundle of wood bound together and used as a protection for entrenched soldiers.

Defensive Fortifications

At the outset of the war, the earliest forms of defensive fortification were simple mud walls and chains or turnpikes blocking roads and small earth or masonry additions to existing walls. Larger centres built forts connected by a ditch, while the major centres developed complex continuous bastioned *enceintes*.

Mud walls, chains, and additions to walls

Attempts at fortification were crude to say the least in the opening months of fighting. In some cases, the first action was simply to remove any possible cover for attacking forces. One contemporary account contains a request for a resolution 'about the demolishing of all the dwelling-houses in the town [of Beachley, Gloucestershire], so that no covert be left for such as shall endeavour again the fortifying of the same'. In many places, hamlets and suburbs were burnt down or demolished to remove this threat, and create fields of fire, although Papillon was critical of this practice, arguing that such places could 'serve as Bulwarks for the preservation of their Towne, and so by pulling downe of them, they advance their owne ruin, to save some small charges; nay, they often increase them, by pulling of them downe'. Bridges were demolished at Cambridge and some woodland was cut down to clear the terrain against any surprises. Sir John Boys, the Royalist commander at Donnington Castle, Berkshire, burnt houses, stables, barns and other buildings as a precaution.



Work in progress on the fortifications of Donnington Castle, Newbury

An aerial view of Donnington Castle as it might have appeared in the Civil War. In September 1643, the Royalist commander Colonel Boys began to strengthen the castle, just outside Newbury in Berkshire, by adding bastions made of earth around the place surmounted by gabions and probably palisades; storm poles might have projected from the earthworks. These earthworks resembled a 'star' fort, cost £1,000 to construct and can still be seen to this day.

The first defences of London consisted of chains across the roads but these were soon replaced. At Manchester, the Parliamentarian colonel John Rosworm, a German who had experience of the campaigns of the Thirty Years War, began to construct mud walls at street ends, fixing posts and chains to keep out the enemy's horse. The defences at Nantwich, Cheshire, were described simply as 'clods of earth', while 'breastworks' were constructed at Birmingham. Barricades were erected outside the east and west gates of Bath, and breastworks were dug beyond the north and south gates; gates were repaired and chains placed across some streets.

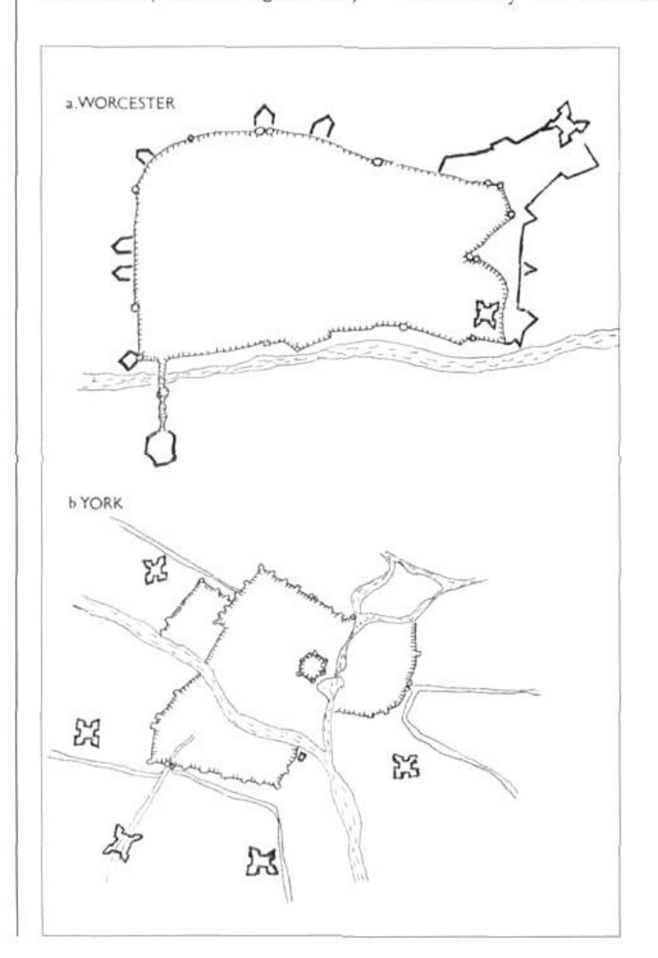
The manner in which locations already provided with walled defences could be placed in a defensible condition more suited to contemporary requirements, was detailed by Thomas Venn in his *Military and Maritime Discipline* published in 1672:

> An ancient Rampar, if it be strong, and surrounded with a wall and Towers, must not be demolished, therefore you must inclose it with a new fortification which must be Regular, if possible, or as near as Regular as might be Betwixt the New Fortification.

He goes on to say that 'many French and Dutch cities were fortified with Ravelins, Half-moons, Hornworks and other sort of works, which sort of building, since 'tis to supply the place of Bulwarks ought to be stronger than usual'.

Worcester had six bastions added in front of its medieval wall on the northern and eastern sides. Bath raised part of its walls, while King's Lynn in Norfolk had an entirely new defence made by adding ten or more bastions to the medieval walls, which gave the town a continuous trace. Nearby Great Yarmouth also received new defences but there was no need to make a complete new *enceinte* or even to add bastions all along the medieval wall, since this had already been done by 1588 in anticipation of a Spanish attack. Similarly, York expected an attack from the Scots in 1640 and preparations had been made to meet a possible siege by constructing several outworks outside the walls.

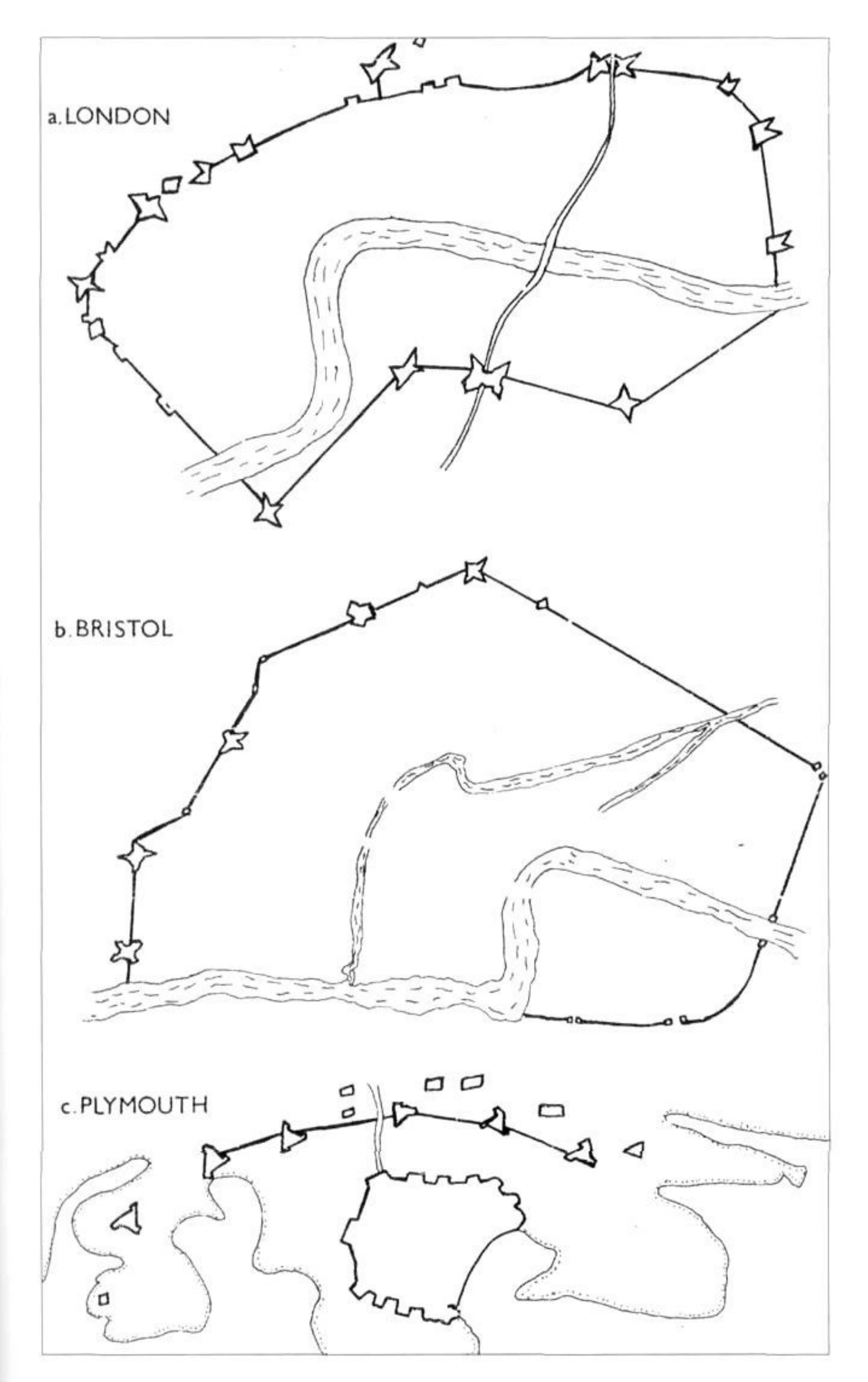
Masonry walls were frequently protected by having earth piled up against them. At Lathom House, Lancashire, the walls of the building were lined with earth and sod 2yds thick, while at many walled towns such as Chester, earth was mounded up against the whole walls to absorb the shock from any artillery attacks. Earth was sometimes piled on top of walls to protect defenders.



Many towns and cities possessed walls built in Roman or medieval times. To strengthen them, bastions were added, or exterior forts and sconces were built as at Worcester and York. Earth was sometimes mounded up behind the walls for added protection, or placed on the parapets to provide cover for musketeers. (From Harrington, 1978)

Chain of forts connected by a ditch

Most of the towns defended by Parliament used this type of method including London and Bristol. The fortifications at London stretched for 11 miles, consisting of a bank and ditch straddled here and there by bastions and forts. In fact the 'Lines of Communication' at London resembled siegeworks rather than defences. At Liverpool, the Parliamentarians constructed a ditch 36ft by 9ft deep cut in from the River Mersey. Behind this ditch was a rampart of earth, probably surmounted by a palisade. Plymouth had a similar arrangement, while Chester had an elaborate defence with 12 forts connected by a continuous line as well as detached forts beyond the walls.

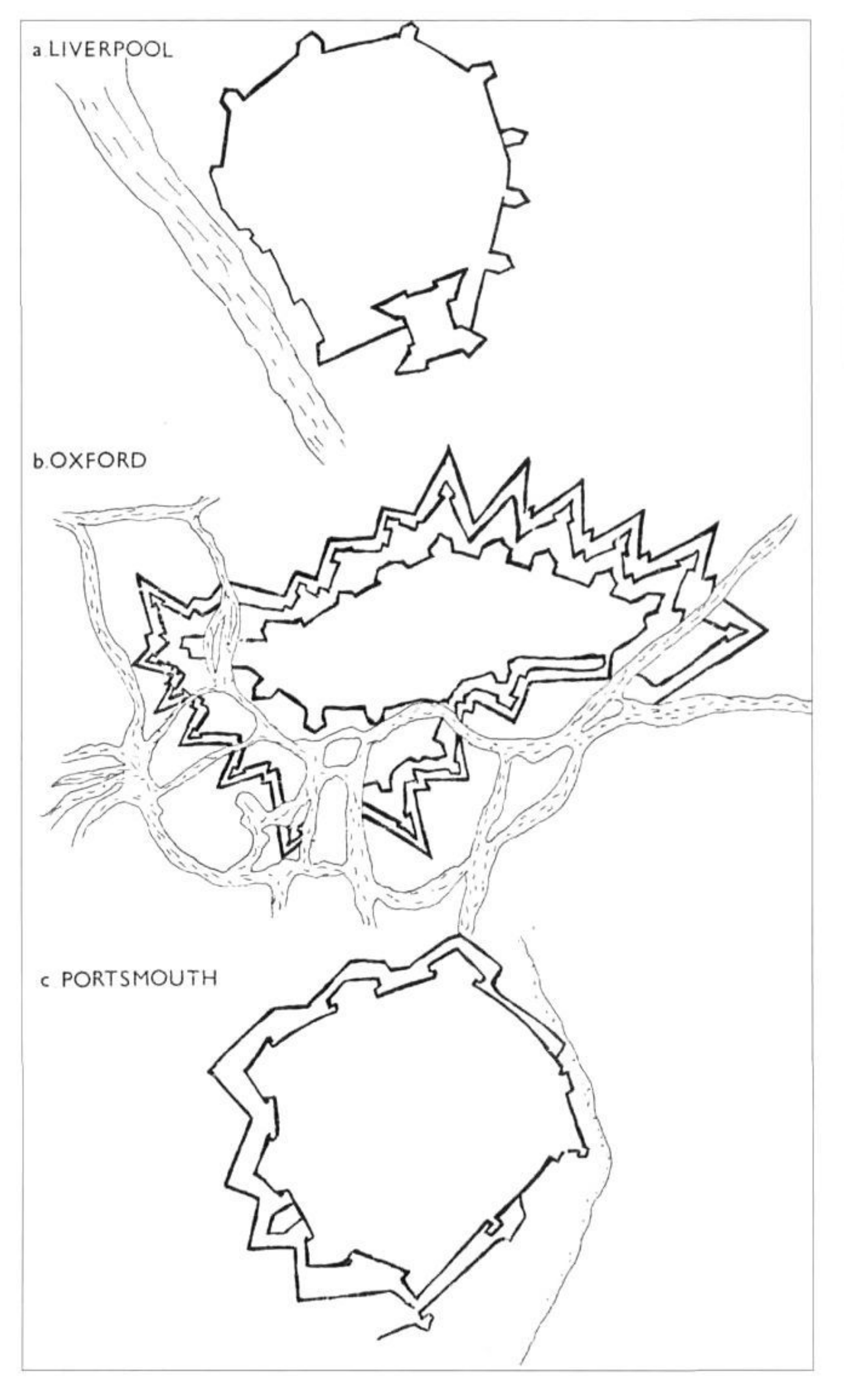


London, Bristol and Plymouth were all Parliamentarian strongholds at the outset of the war, and all exhibited similar forms of defence with individual forts and sconces connected by ditches and banks. The works at Bristol were remodelled after the Royalists captured the city. (From Harrington, 1978)

Continuous bastioned *enceinte*

Thomas Venn continued his description of foreign cities: 'They are likewise frequently fortified with a Faus-bray, and the Breastwork of the Covert War; and sometime with a Ditch about this Out-Breastwork, and with Stakados'. The practical result of these arrangements was to provide a new and continuous *enceinte* in advance of any older one. This method, inspired by Dutch principles, was used to some extent by the Royalists, and was superior to the Parliamentarian methods. While the Royalists were more advanced in techniques than their

As the Civil War progressed, more elaborate forms reflecting continental principles replaced earlier fortifications. The defences of Liverpool and Oxford were designed by Bernard de Gomme, but were never completed at the former. (From Harrington, 1978)



adversaries at the outset, by the end of the first war, and particularly in the 1648 campaign, Parliamentarian engineers had proved remarkably proficient in building advanced artillery siegeworks at Newark, Pontefract, Yorkshire, and Colchester.

When the Royalists captured Bristol in 1643, the earlier works were removed and replaced by a curtain wall over 4ft high, except for some places where it reached 6ft. The ditch in front was generally about 2yds wide, but only 5ft deep.

Simple flanking bastions were placed at regular intervals. Reading, Portsmouth, Carmarthen, Newark and Bridgwater were all examples of towns employing such defences. A strong defence system was created around Oxford and it clearly reflected Dutch influences, while at Liverpool, de Gomme proposed a new and continuous bastioned trace in 1644, although less complicated than that at Oxford.

Weaponry

At the outset of the conflict, the main artillery pieces used by the protagonists were as follows:

Gun	Calibre	Weight	Length	Weight of shot	Range /10° elevation
Cannon Royal	8in.	8000lb	8ft	63lb	
Demi-cannon	6in.	6000lb	12ft	11lb	
Culverin	5in.	4000lb	11ft	15lb	460yds/2,650yds
Demi-culverin	4½in.	3600lb	10ft	9lb	400yds/2,400yds
Saker	3½in.	2500lb	9½ft	5¼lb	360yds/2,170yds
Falcon	2½in.	700lb	6ft	2¼lb	320yds/1,920yds

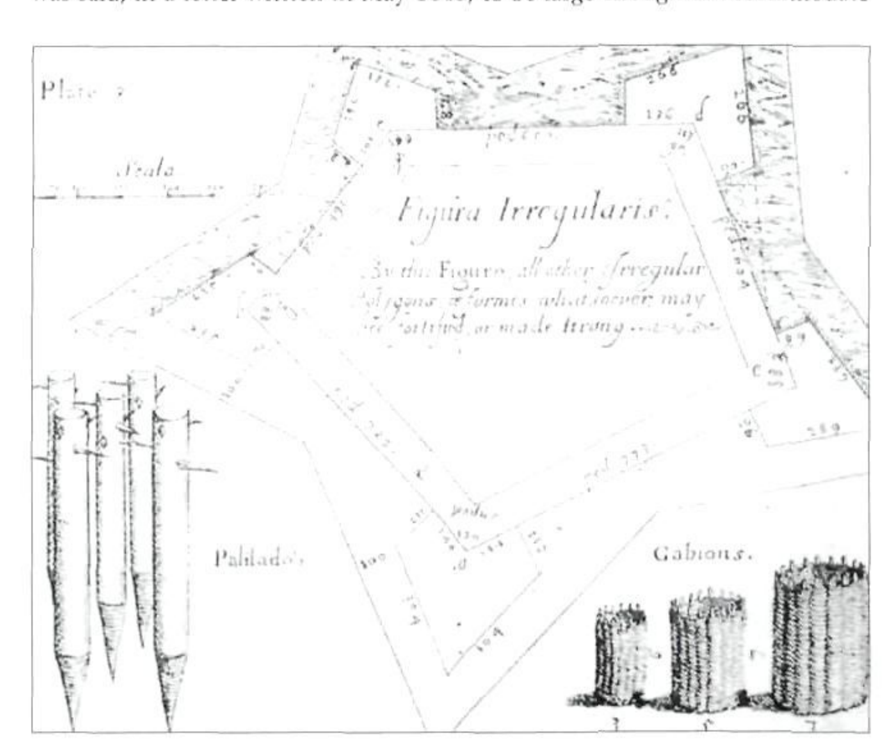
There were never enough heavy weapons, however, with the result that many sieges were prolonged. Later, the New Model Army employed a large train of artillery that was to prove particularly effective in the Irish campaign. Other weapons made their appearance during the course of the fighting, some of them rather unique such as mortars. The latter were considered of value more for their psychological effect on besieged garrisons than for their physical impact.

Tour of the fortifications

Defensive fortifications

Seventeenth-century fortifications could be quite complex and extensive in scale and a few places, such as Oxford, London and Newark-on-Trent, saw the construction of defences mirroring the latest developments. For an enemy approaching these formidable 'workes', he would see long earthen breastworks several feet high surmounted by wooden palisades of sharpened poles. Sometimes stone structures were built like the Roushill Wall at Shrewsbury or the stone redoubt constructed near the old Portwall, Bristol. Angular bastions projecting perpendicular from these earthen banks might be spaced at intervals along the circuit to provide covering fire. On the bastions, often covered with turf, would be cannon-baskets known as gabions and occasionally woolpacks to protect cannon. In front of the rampart would be a ditch or graffe created by the quarrying of the earth. Protruding from the bank might be horizontal sharpened stakes called storm poles. In most cases the ditch would have been dry although some engineers did occasionally direct water into these. A steep glacis would be seen on the landward side of the ditch affording no protection to the attackers; and sometimes masses of interwoven wood called an abbatis would cover this area to hinder movement.

Spaced at intervals might be various star-shaped or irregular-shaped forts or sconces. These presented quite formidable defences standing many feet above the ground, built of earth and sprouting cannon hidden behind earthen ramparts surmounted by palisades, with projecting storm poles. Such forts could be quite large. For instance, the sconce at Muskham Bridge by Newark was said, in a letter written in May 1645, to be large enough to accommodate



A plate from *Enchiridon of Fortification* of 1645 showing an irregular fortification. Wooden obstacles called palisades are shown on the left. These often surmounted earthen barricades. Cannon baskets or gabions, shown on the right, were used as cover for artillery ordnance.

400 horse and men. A variety of smaller earthworks called redoubts, redans, hornworks, or half-moons served as platforms for cannon as well.

The ancient walls, if they existed, may have been lowered to reduce the target. Mounds of earth might be visible on the battlements, while behind the walls there would be earth piled against the masonry.

Smaller obstacles were freely employed to add strength to the defences and were often placed in ditches. These included a variety of sharpened iron or wooden implements such as 'Swedish arrows', 'caltrops' or 'crow's feet' and other metal contraptions designed to hinder the attackers. Banbury Castle, Oxfordshire, was fortified 'with Harrowes and other devices to keep off the horse'. Hidden pits called pitfalls were dug at Oxford in 1645 to disrupt the Parliamentarians should they storm the place. At Newark, the pitfalls were described as 'two rows of holes ye height of a man in depth, and so near it might hinder their sudden assaulting of the works'.

Circumstances varied from place to place and few towns or cities presented such formidable obstacles as these, although most employed some of them.



ABOVE The fortifications at Woodstock drawn by Richard Symonds, who described them as: 'The palizadoes at Woodstock stand upon the top of the curten as here, and the like at the foot of the false bray.' (Photo: The British Museum)

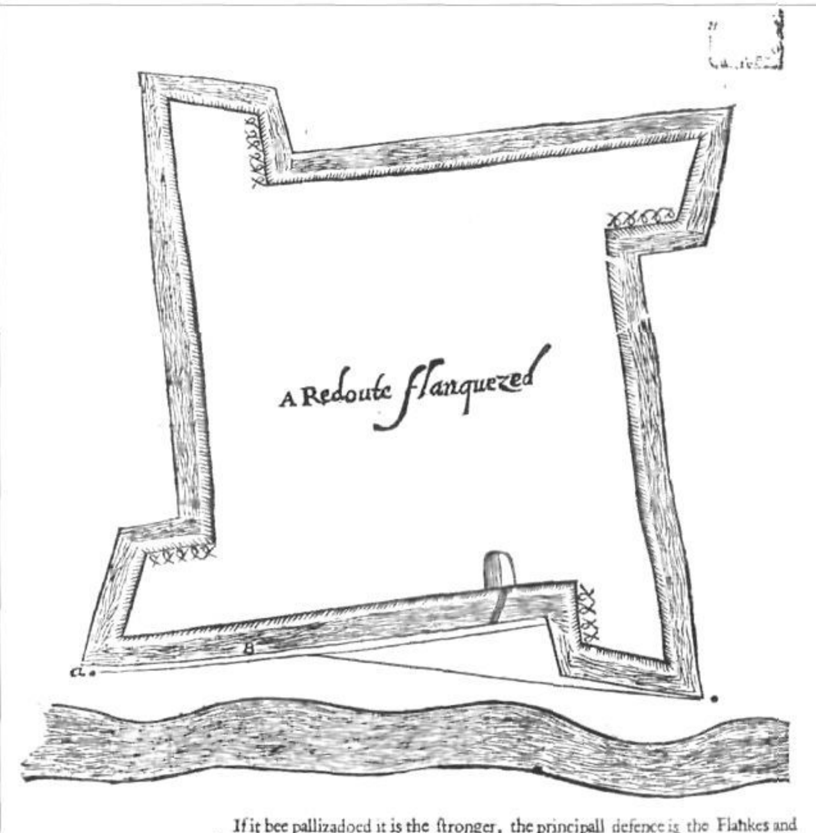
The manner of framing a Quadrangle Skonſe.

This Foure-ſquare Skonſe, is of greater ſtrength than your Triangle, and if it be favoured with a ſtrong Scituation, as great Rivers, or upon a Rocke, or where it may be flankered from the Bulworks of a Fort, it will ſtand in great ſtead; otherwiſe it is not to be taken for a ſtrength of any moment: The Bulworkes and Curtines are to be made very high, thicke, and ſtrong, that it may endure the battering of the Enemies Ordnance.

A Skonſe

LEFT 'A sconce' as depicted in Robert Ward's 1639 treatise *Animadversions of Warre*. Such fortifications were very common in the war and allowed covering fire from every position. Several survive today such as the Queen's Sconce outside Newark-on-Trent.

RIGHT 'A redoubt flanked' as depicted in *Animadversions of Warre*. Redoubts in various forms were constructed by both sides during the war at a number of siege sites including Newark, Colchester and Pontefract.



If it bee pallizadoed it is the ſtronger, the principall defence is the Flankes and the third part of the Breſt-worke, as by the two Lines, one drawne from *A to A.* the other from *B* to *B. View the Figure.*

The next diſcourſe is the uſe of Artillery, and then after that the duties of Souldiers in Garriſons, ſhall bee plainely ſhewed.

BELOW An imaginary idea to overcome sharpened wooden and metal obstacles known as *chevaux de frise*, from a German drawing c. 1600. Such barriers were employed liberally by both sides during the war to prevent troops from assaulting places.

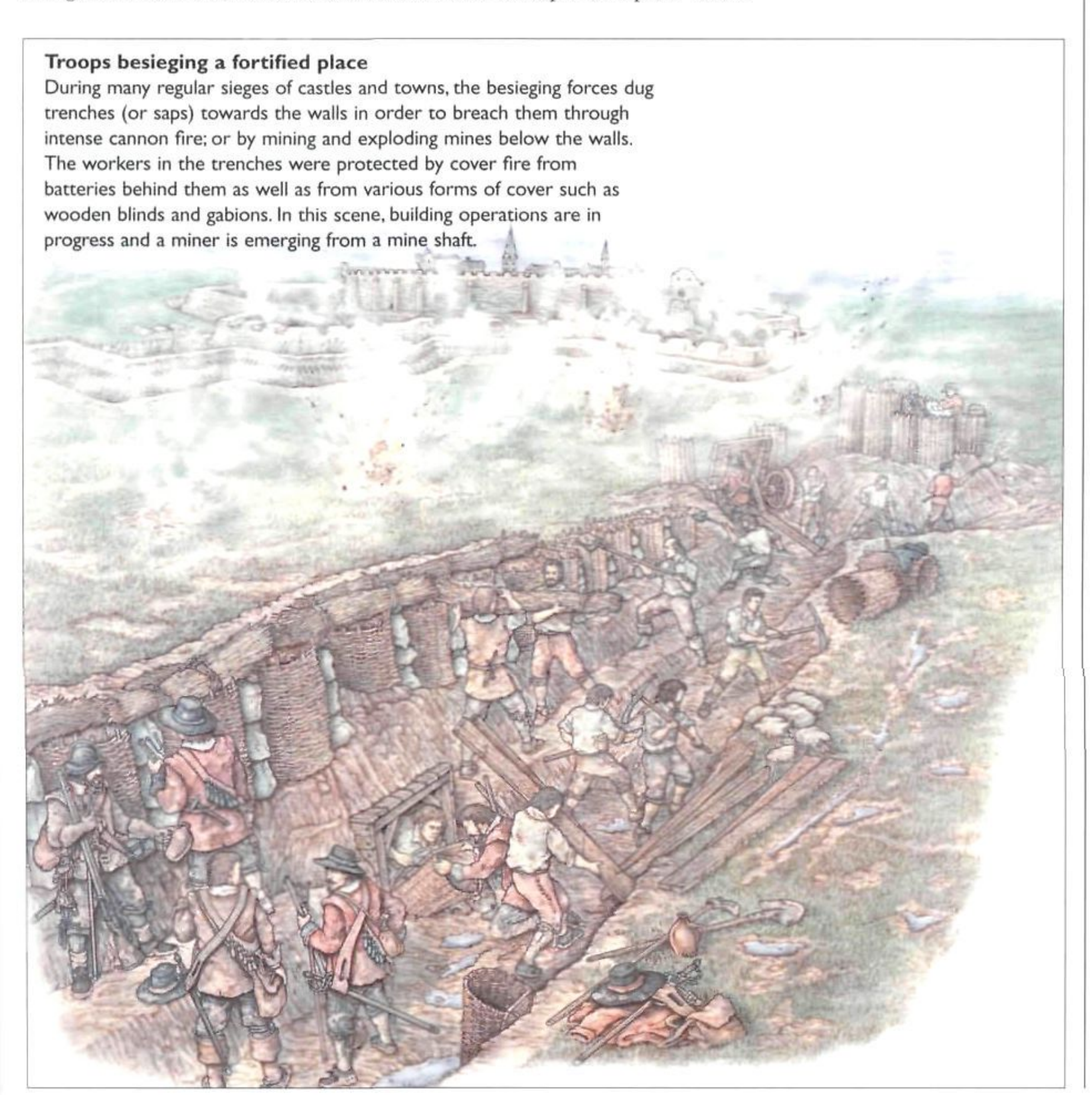
Offensive fortifications

The would-be attacker, seeing the difficulty of approaching these fortifications across an open field, could bombard the defences with various artillery pieces hoping to create a breach. But even if this succeeded, approaching the breach in safety would be virtually impossible because of the enfilading fire from the bastions and various detached outworks and forts. The besiegers would therefore 'lay down' a regular siege in the hope of starving the garrison into surrender. This was the tactic successfully employed by the New Model Army before Colchester in 1648.

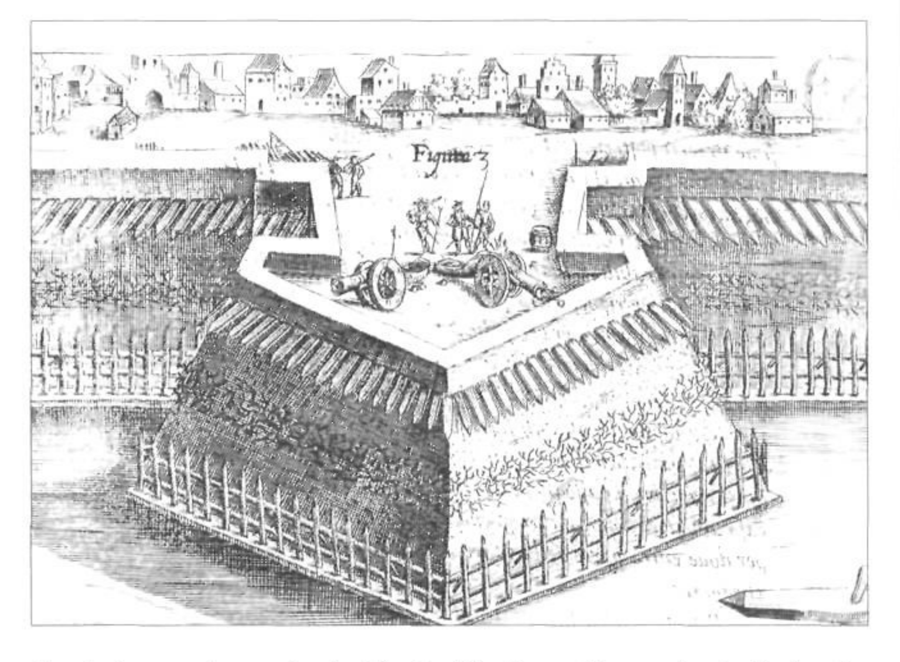
The main method for besieging a place was to construct encircling lines of fortifications both to contain the besieged as well as to defend against any relieving force attempting to 'raise' the siege. These siegeworks were called circumvallations and contravallations respectively, although it was rare for besiegers to build the latter. Newark offers a rare example of a place where

Troops besieging a fortified place

During many regular sieges of castles and towns, the besieging forces dug trenches (or saps) towards the walls in order to breach them through intense cannon fire; or by mining and exploding mines below the walls. The workers in the trenches were protected by cover fire from batteries behind them as well as from various forms of cover such as wooden blinds and gabions. In this scene, building operations are in progress and a miner is emerging from a mine shaft.



RIGHT An engraving from *Theatro Militare* by Captain Flaminio published in Antwerp in 1617, depicting some of the various methods of fortifying a bastion including vertical storm poles, horizontal palisades and an abbatis of twigs in between. Some of these methods may have been employed in the Civil War.



the besiegers dug such double fortifications. Siegeworks built by the Parliamentarians before Lathom House, Lancashire, in 1644, were described in a Royalist diary as:

BELOW Lines of circumvallation from Muller's *Attack and defence of fortified places* (1747). Even though this engraving dates from a century after the Civil War, the principles are identical, with the besiegers' camp positioned behind the circling entrenchment.

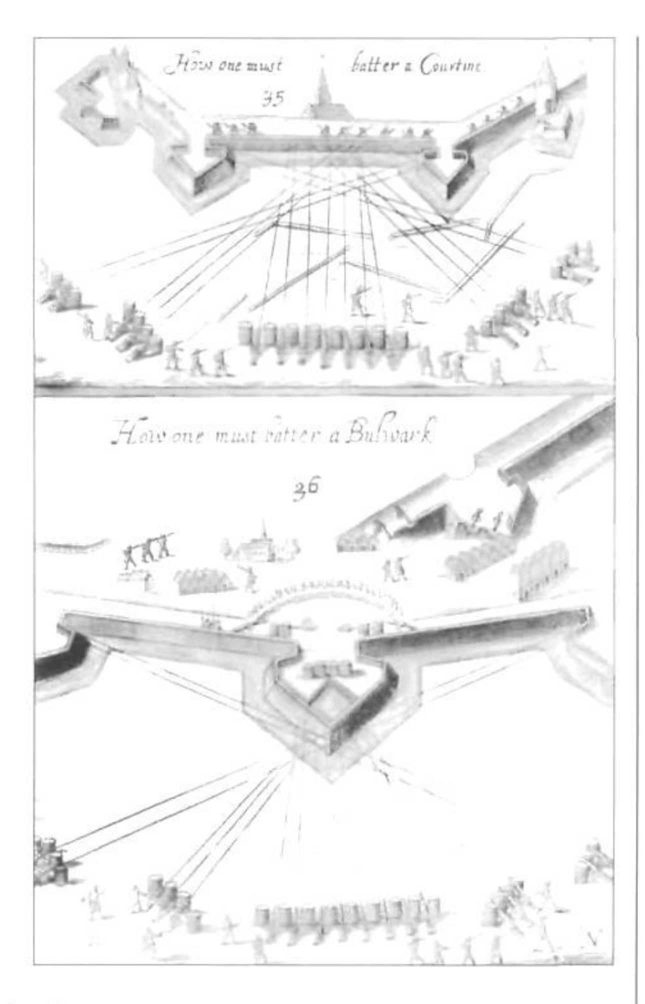
> an open trench round the house, a yard of ditch, and a yard raised with turf, at the distance of sixty, one hundred, or two hundred yards from the walls. They had eight sconces raised in such places as might most annoy our men in the sally … with two yards of rampart and a yard of ditch, in some places staked and palisaded to keep off a violent assault. Their pioneers were first sheltered by baskets and hurdles, and afterwards by a kind of testudo, a wooden engine running on wheels, roofed towards the house, with thick planks, and open for the enemy to cast up the earth.

Raised batteries would be constructed of earth to provide protection for the siege artillery whose task was to bombard the garrison into submission. While many batteries conformed to standard principles, others were adaptations constrained by time or materials available. In December 1645, the Parliamentarian Colonel Browne, while attempting to bombard the Royalist garrison at Donnington Castle into surrender, 'made a mount upon the said level some 200 paces of the Castell, trench and palisade it, the walls being high, cannon proof, and the top made of great thickness and strong, as covered over with bricks and earth propped with great beams and laid over with packs of wool to prevent the execution of mortar grenades'.

There are numerous descriptions of batteries built by besieging forces. At Lathom House, a battery built to protect a large mortar used to bombard the building was constructed on rising ground about half a musket-shot to the south-west. It was in the form of a full moon, with a rampart 2½yds above the quarry ditch. While the mortar caused considerable damage, the battery failed to stop a Royalist sally in April 1644 that levelled the ditch and hauled the menacing weapon into the house.

If bombardments failed to force the garrison into submission, trenches would be dug towards the besieged place with the intention of mining the walls or bombarding at close range to create a breach that would allow penetration by the attacking force to storm the place, which happened at Basing House in 1645 and Drogheda, Ireland, in 1649. These trenches were termed approaches. Soldiers would dig the saps or trenches under the protection of a variety of structures called blinds that provided cover from missiles and bullets. Assuming approaches were successful, miners could then burrow towards the walls and place explosives under the structures. An alternative approach would be to place explosive devices called petards against gates or in walls to blow them open.

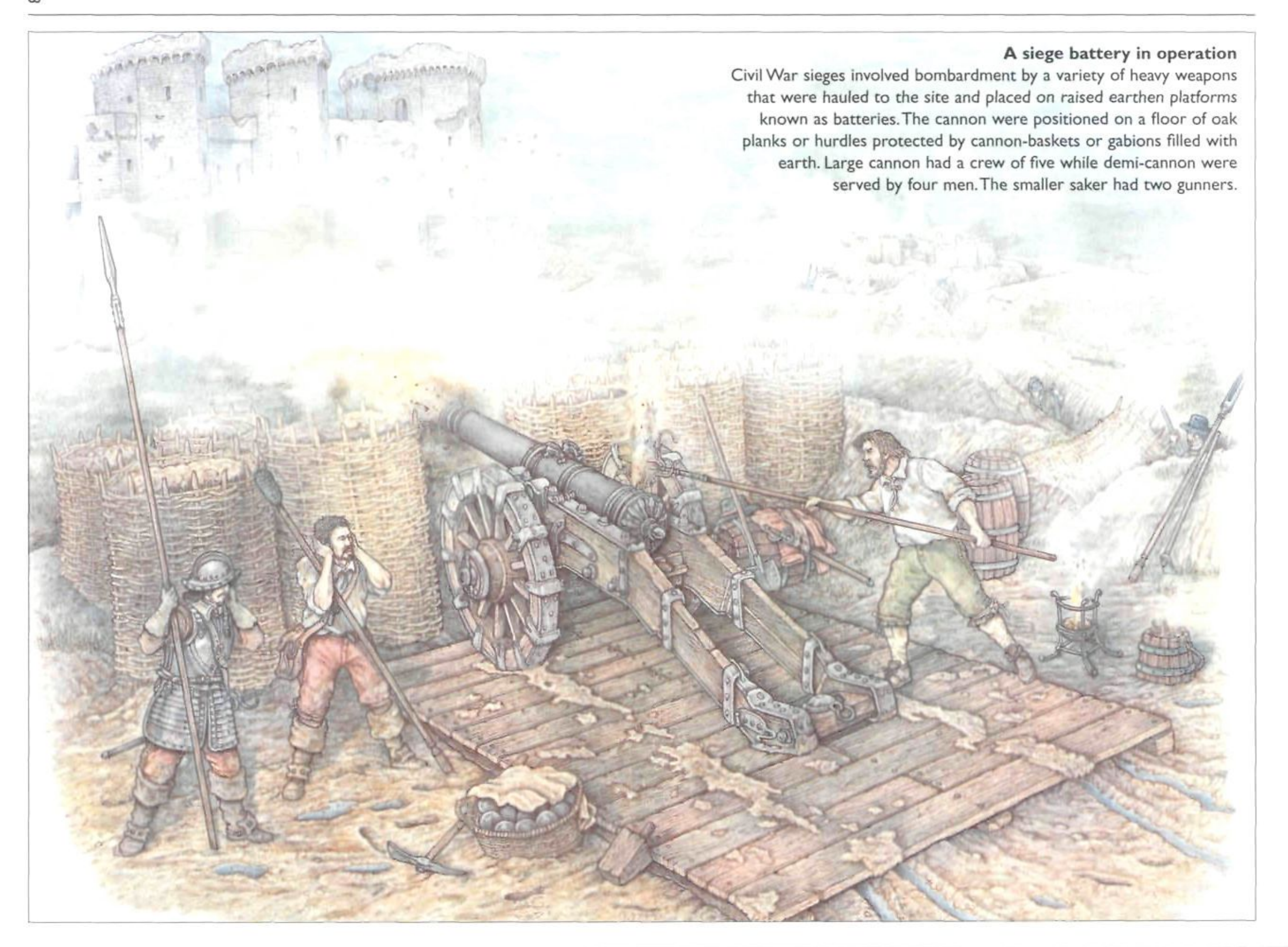
Mining operations were conducted by Parliamentarian troops against Lathom House, Bridgnorth Castle, and elsewhere, while at Lichfield Close, Prince Rupert 'caused the Colliers to come in, and they brought with them all their pick-axes to undermine it'. The diarist of the Lathom siege makes reference to mining. The garrison were on guard against any mines and they 'had diligent observers to hearken to any noises from their trench, by which our men might thereby direct their countermines'. On another occasion, it was discovered that mining operations had been temporarily curtailed because rainfall had slackened and loosened the earth, causing a cave-in that killed three miners. At Hawarden Castle, Flintshire, Parliamentarian mining operations were discovered by the Royalist garrison, while at Wardour Castle, Gloucester, the Royalists successfully detonated a mine under the building.



This kind of image was very common in military treatises of the period and served to demonstrate how to conduct offensive operations against fortified places. Cannon are shown protected by cannon baskets or gabions.

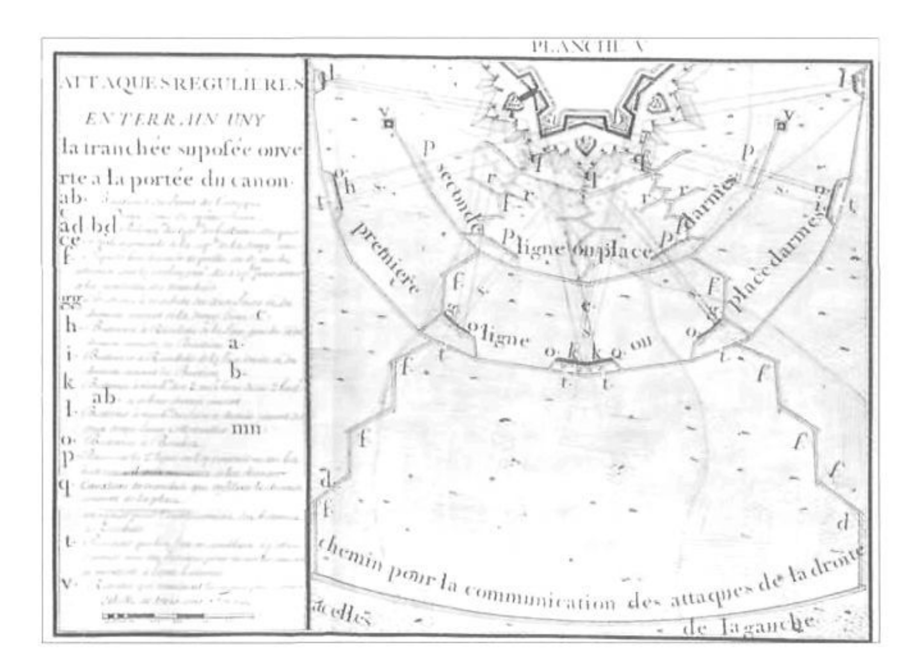
Sometimes, siege engines were employed by attacking troops. Called sows because of their shape, they were vehicles on wheels covered with boards to protect those within from musket shot. The Royalist newspaper *Mercurius Rusticus* described the use of a 'sow' and a 'boar' at Corfe Castle, Dorset, in 1643, so that Parliamentarian besiegers could 'make their approaches to the wall with more safety'. Sir William Brereton, the Parliamentarian commander in north-west England, took possession of three 'moveable breastworks' in March 1643/4. They were 'fitted to storm any place or enter any breach and will shelter from the enemy's shot 18 musketeers ... these also will be of use to barricade suddenly any bridge, lane or narrow pass.' Besieged garrisons could use them also for when a breach was made; 'they can be used to make forward works'.

So important was it for troops to assault a place under some form of cover that various inventors vied for the business of constructing such engines and, in 1644, one Edmond Felton petitioned Parliament for a contract in a pamphlet entitled *Engins Invented to save much Blood and Moneyes*. He even claimed that his



A siege battery in operation

Civil War sieges involved bombardment by a variety of heavy weapons that were hauled to the site and placed on raised earthen platforms known as batteries. The cannon were positioned on a floor of oak planks or hurdles protected by cannon-baskets or gabions filled with earth. Large cannon had a crew of five while demi-cannon were served by four men. The smaller saker had two gunners.

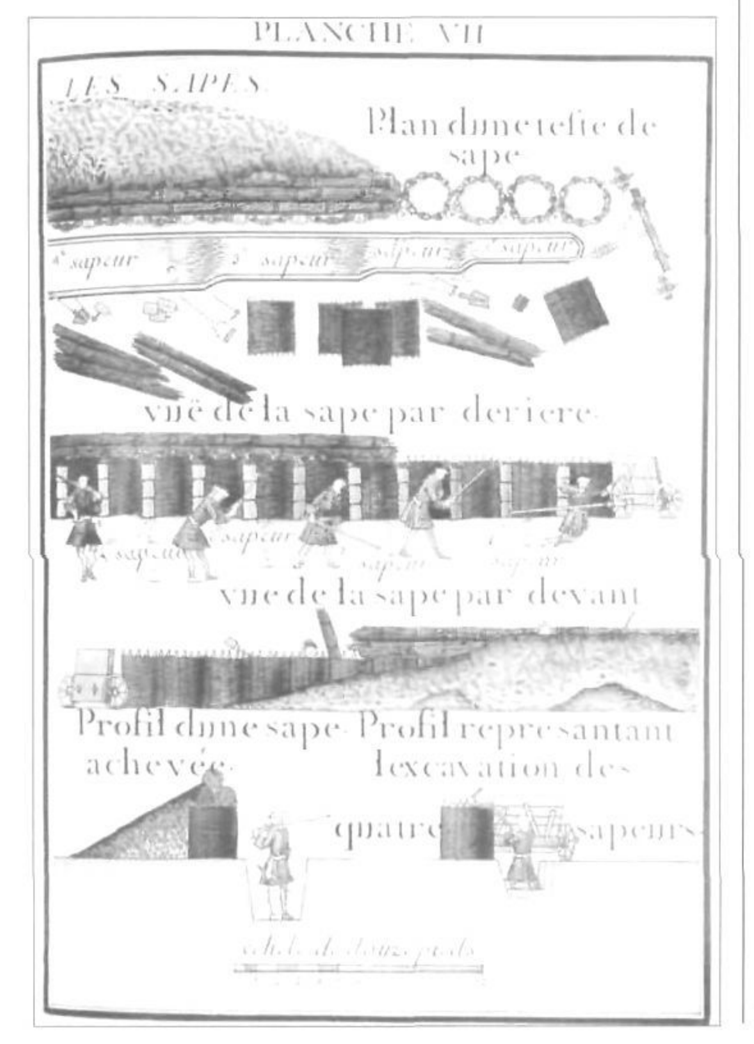


LEFT Principles of siegecraft in 17th-century Europe showing the besiegers' trenches and approaches. The line of communication or circumvallation can be seen at the bottom, with advanced zigzags approaching the walls. An original watercolour from a manuscript after Vauban.

BELOW The method of digging trenches and saps, from a manuscript written in the early-18th century. The techniques of siege warfare changed little over 200 years. Sappers would dig trenches under cover of wooden fences and blinds surmounted by bundles of wood.

ideas had been stolen by a Dr Chillingworth and that the Royalists were developing siege engines based on his designs, some of which were used at the siege of Gloucester in 1643 after a design. One source suggests that the Parliamentarians may have left behind a 'sow' when Beeston Castle, Cheshire, was relieved in March 1645, although the writer might have confused Beeston with Gloucester. This was described as a tower of wood, musket-proof, mounted on wheels and hauled by oxen. The tower was divided into rooms with loopholes.

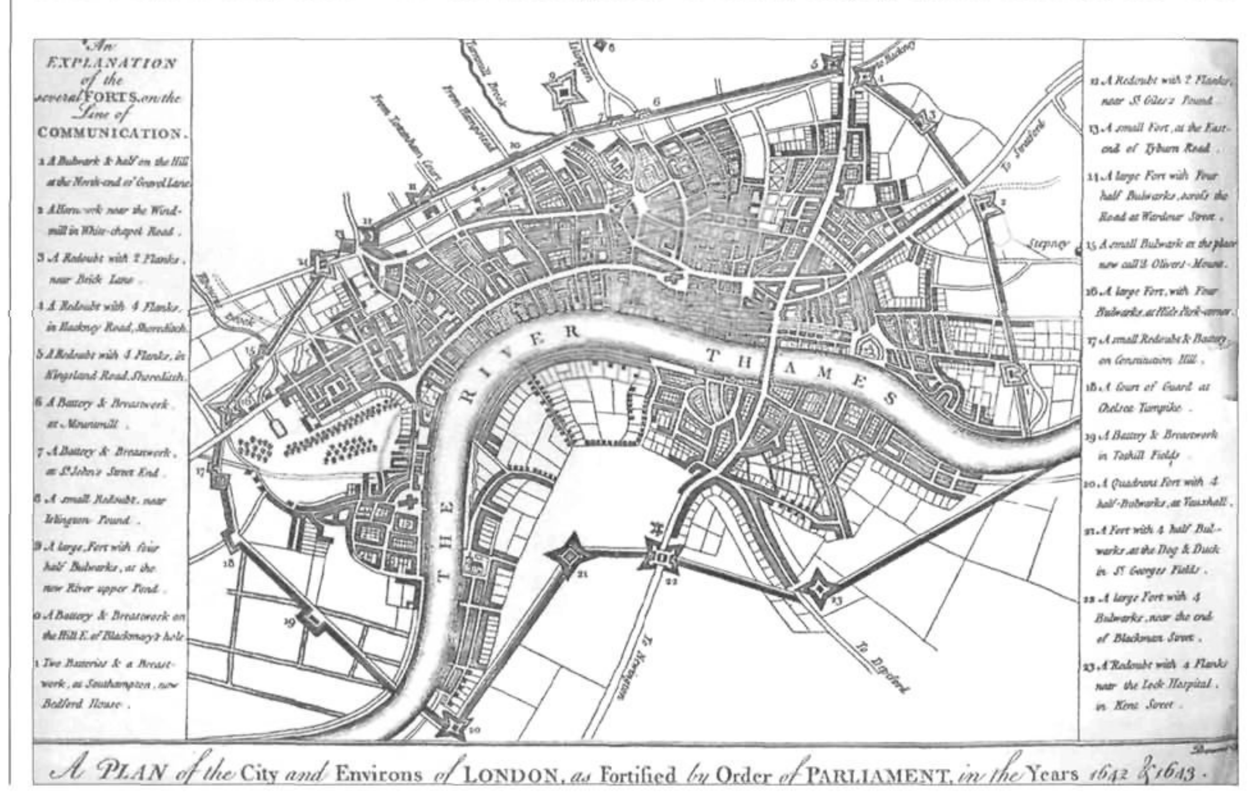
All this assumes that the besiegers did not attempt to counter-attack using sallies, which were often conducted under cover of darkness. If they were successful, temporary fortifications might be destroyed, guns spiked and prisoners taken. Lathom House again offers an example where the Royalist garrison 'sallied forth' on several occasions, attacking the besieging troops and demolishing their works. For instance, in April 1644, over 140 troops came out of the postern gate of the house, forced the enemy out of the siegeworks and batteries, nailed the cannons and killed about 50 soldiers.



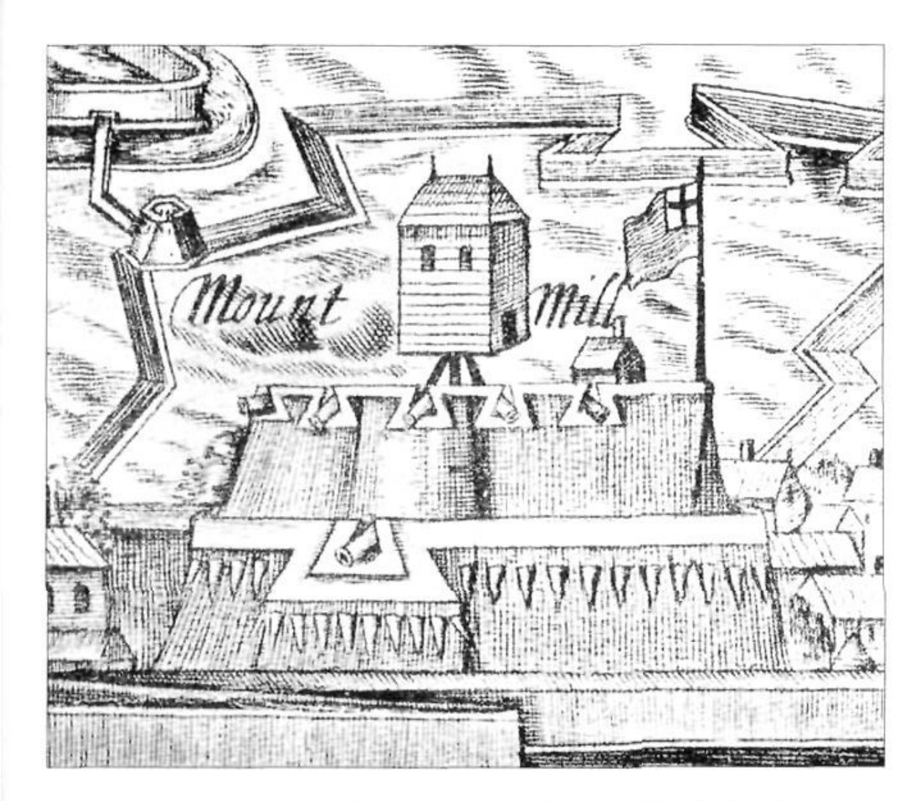
The living site

March'd rank and file with drum and ensign,
T'entrench the city for defence in?
Rais'd rampiers with their own soft hands,
To put the enemy to stands;
From ladies down to oyster-wenches
Labour'd like pioneers in trenches,
Fell to their pick-axes, and tools,
And help'd the men to dig like moles?

Samuel Butler wrote his poem *Hudibras* inspired by his observations of the building of the defences of London during the war. The first earthworks had been erected in October 1642 and work continued every day for the next several months. 'They do not even cease work on Sunday, which is so strictly observed by the Puritans,' noted the Venetian Ambassador. More remarkable was the part played by women, the Lady Mayoress herself even lending a hand. Ladies of rank were also present as well as fishwives who marched from Billingsgate to Crabtree Fields. Columns with drums beating and flags flying were sent through the City to recruit more volunteers until it was estimated that 20,000 people were working on the defences without pay, drawing only rations. One observer, Mr. May, commented: 'It was the custom every day to go out by thousands to dig; all professions, trades and occupations taking their turns; and not only inferior tradesmen, but gentlemen, and ladies themselves, for the encouragement of others, carrying spades, mattocks, and other



A plan of the fortifications of London, the most extensive in the country. However, the banks, ditches and forts destroyed much private property and after the earthworks were slighted in 1647, there were a number of claims for compensation.



A view of Mount Mill Fort, London, from a contemporary broadside. This shows embrasures for cannon as well as storm poles protruding from the earthworks. The fort appears to be a two-storey structure

instruments of digging; so that it became a pleasant sight in London to see them go out in such an order and number with drums beating before them.' On one day alone, 'about 9,000 weavers with 48 Colours went this day to dig the new trenches where they did special service', as the London newspaper *Mercurius Civicus* noted in the second week of June 1643.

The enthusiasm of the citizens of London in the task of building the defences was acknowledged in a pamphlet published in June 1643, noting their loyalty and 'their voluntary contributions, personall actions, and strong Fortifications, for the safety of the King, Parliament and Kingdome'. It went on:

> No antiquity can record like fortifications, bulwarks and trenches to have been about this city, as now are raised and made, for the strengthening and security thereof, who can testify that former ages have produced such examples of loyalty, that even from the greatest to the least of the said City, from the highest to the meanest, have put their hand to the work, who can report of times past, that ever so many thousand did daily work in their own persons, and now is seen freely and with the work of their own hands, secure themselves by such out-works, who living can report that every day in the week in a warlike manner with their Commanders, Colours, Drums and weapons of war in one hand, and instruments of labour in the other, so many thousands should march to work, as to a field of fight.

The Venetian ambassador added that although the workers received little food and no pay, 'there has been an enormous rush of people, even of some rank, who believe they are serving God by assisting in this pious work, as they deem it.'

Isaac Pennington, the mayor and the man responsible for organising the fortification of London, was eulogised for his efforts in a pamphlet published in April 1643, commending him for 'advancing and promoting the Bulwarkes and Fortifications about the City and Suburbs'. The writer noted 'the great cost bestowed upon these works, they are raised to a great height, according to the

Constructing the 'Lines of Communication' around London, with a view of Fort No. 22

In 1642/43, the Corporation of London decided to construct a circuit of fortifications around the city to defend the capital against Royalist attacks. Built by thousands of men, women and children it became known as the 'Lines of Communication' and stretched for 11 miles. The 'Lines' consisted of an earthen bank and ditch which connected 22 forts, batteries and hornworks of various shapes and sizes. This scene shows the work in progress at Fort No 22, which was described as 'a large fort, with four bulwarks near the end of Blackman Street'.



best advantages of Geometricall proportions, there is earth heaped upon earth, compaced together according to the dimension of Art; so that every Fortification ... is strong by the weight and worth of the work.' Pennington's efforts were attributed to his zeal in trying to preserve the 'Protestant religion' against those 'malignants' who supported the King. 'These Bulworkes and Fortifications made round the Citie, shall glorifie your Name to posterity.'

One interesting observation made by the Venetian ambassador in March 1643 concerned the form of the fortifications at London. He stated that 'the shape betrays that they are not only for defence against the royal armies, but also against tumults of the citizens, and to ensure a prompt obedience on all occasions'. The fact that the London defences resembled siegework lines of circumvallation rather than defences may have been more than coincidental.

Word about the women of London helping out on the fortifications spread to other places. In Royalist Worcester, as if to snub those efforts and to commemorate some of their own who had been killed in the siege, women from every ward of the city armed themselves with spades, shovels and mattocks and joined in companies with colours and drums in late June and July 1643 to go out and destroy the siegeworks left by the Parliamentarian forces of the Earl of Essex. Henry Townshend, serving in the Royalist garrison, described them as:

> going in a warlike manner like Soldiers, and did so behave themselves therein in slighting all such fortifications ... and throwing down of ditches that by their own Industry and free service (in imitation of the She Citizens of London) as they within one week will perfect the levelling of the same, which was done the rather by them, by reason some of them were killed in the siege.

Work at Oxford began in September 1642 as the Venetian ambassador reported to his superiors in Venice: 'They are trying to set up earthworks as some defence for the city, which is not capable of resisting attack or of standing a long siege.' In contrast to London, however, there appears to have been a general lack of enthusiasm for building fortifications in the Royalist capital and progress was slow. When Charles I inspected the labourers sent to work on four forts in December 1642, he found only 12 when there should have been 122 men. On 8 June 1643, he had to issue a 'speciall direction concerning the finishing of the fortifications in an about the city'. A month later, *A proclamation concerning the Fortifications about the Citty of Oxford* was published, which reiterated the June proclamation. It required all inhabitants between the ages of 16 and 60 to work one day a week under the direction of the Royalist Colonel Lloyd until the fortifications were finished. The day was from 6am to 11am and from 1pm to 6pm drummers were appointed to rouse the men out of their beds at five in the morning, and to perform during the day 'to encourage the workers at the Work'. A note was taken of each man who worked and a list kept of those who failed to show up. As an alternative, 1s. a day could be paid in order to hire another, but this was a penalty as there was no question of finding a substitute. Women 'not having Husbands in this place' were similarly expected to pay 1s. or find a substitute. No one was exempt including noblemen, privy councillors, workers in the royal household and servants to the queen and the royal princes. Soldiers and officers of the army had to work on the fortifications when not on duty elsewhere, or pay the same. Every person at the colleges and halls of Oxford University was expected to work one day a week on the fortifications or pay the fee. Spades, shovels, mattocks, hand-barrows, wheelbarrows and all other tools necessary for the work were provided and were to be delivered back to their owners when the defences were finished.

Work continued throughout the war on the Oxford fortifications and various proclamations were issued from time to time. One order of 19 August 1645 required 'all strangers, inhabitants, and resident within this University

and City' to work for several days on the fortifications behind Christ Church, find substitutes or pay the 12d. fine. This was in response to the fact that a number of persons had pleaded ignorant to a previous order. Drummers and bell ringers would be sent on Thursday 21 August to alert the workers to gather at the Christ Church meadows at 7am; they were also expected to work on the following Friday, Saturday and Monday.

Citizens and garrison troops in other towns were more fortunate. Nottingham also had to provide pioneers to make breastworks, but they were paid 8d. a day each, the cost being met by a town assessment. Nehemiah Wharton stated that the Earl of Essex paid his troops 1s. a day at the fortifications of Worcester in September 1642. Later in the same city, Prince Maurice ordered that those between the ages of 16 and 60 who failed to show up to work on the fortifications did so 'upon pain of death'.

An entry in the Order Book of the Staffordshire County Committee contains the following entry for 2 March 1643/44: 'That ther be 300 mattockes and spades presently provided for the use of the garrison,' while two days later, it stated that 'all the inhabitants of Stafford assiste to morrowe to amende the works at the broade eye [a strip of meadowland just outside Stafford] ... and Captain Foscall is desired to help to gather them together, and to give them notice.' An interesting entry for 14 March notes:

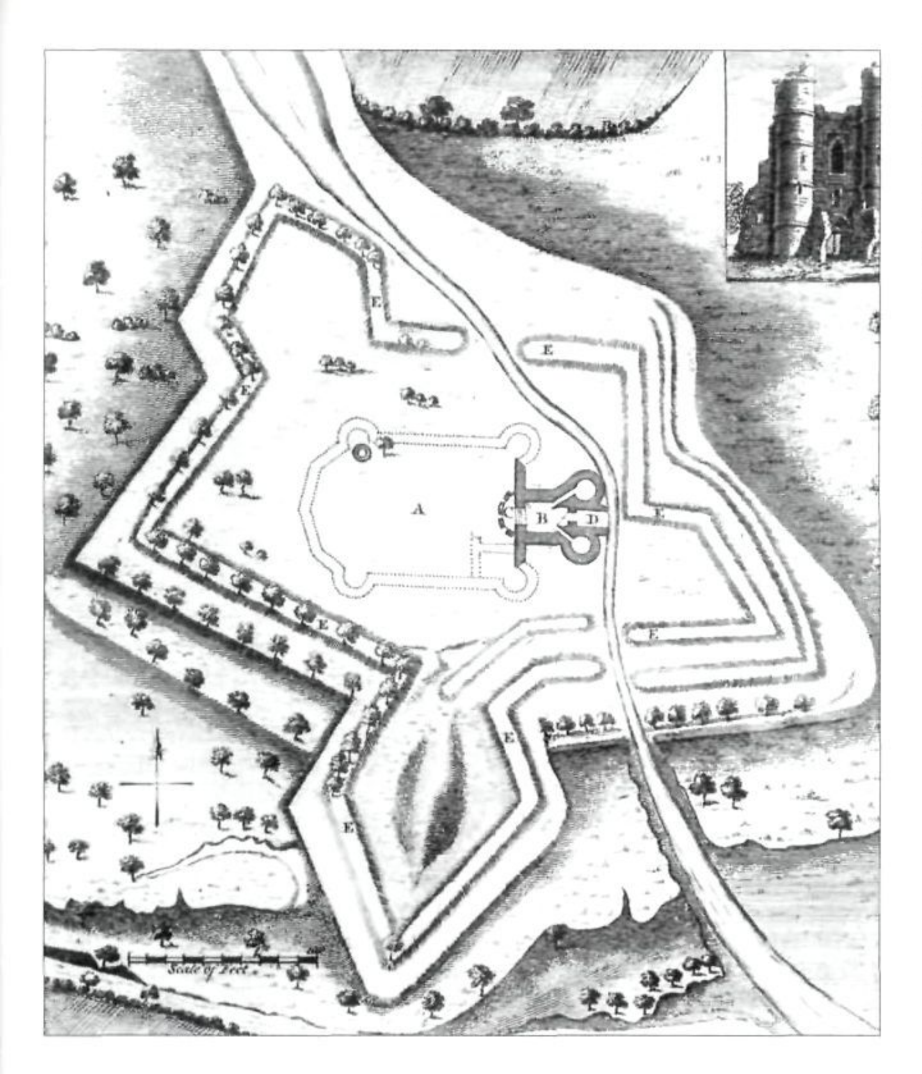
> Workes and Fortifications. Swyne and cattle not to spoyle the works. Whereas there hath beene greate spoyle and decaye of our Fortificationns [at Stafford] by the Inhabitants swine and cattle rooting and trampling downe the same It is therefore ordered that whatsoever swine or cattle shall be found about the said works of Fortifications that the owners of the same shall pay for every beast twelvepence, and for every swyne sixpence to be paid to the Souldiers that shall take or find the same. And it is likewise ordered that no person or persons whatsoever after the workes are made shall go upon the same upon peanie [penalty] of twelvepence for every one so offending to be payed to the Souldiers of this Garrison.

The construction of fortifications seriously disrupted the business life of many places. A note in *Mercurius Civicus* for 21–28 September 1643, reported that at Bristol, 'the tradesmen and other inhabitants are summoned in by tickets set up in severall places to shut up their shops and goe forth every Monday, Tuesday and Thursday for the raising of fortifications ... There are at no time but few shops open in the City, for the most part scarce one in ten, the rest are gone away.' After the capture of the city by the Royalists, a directive came from Ralph Lord Hopton in June 1644, requiring 'threescore labourers out of your hundred next Thursday by 7 o'clock in the morning, with good and serviceable spades and pickaxes' to work on Fort Royal near Brandon Hill.

Prisoners were also forced to work on the fortifications as at Stafford where 'Michaell Nickens shall procure as many of the prisoners as he can to labour with him at the workes and shall take two musketeers from of the gaole gate to guard them, which prisoners shall have 4d. a day a piece payd them by the Treasurer over an above theyr former allowance.'

At Bridgnorth, Shropshire, we read of John Lawrence being ordered to procure mattocks, spades and other tools to make fortifications in August 1642. In February 1645, the same gentleman was commanded to go into the neighbourhoods to get workmen 'to worke at the fortifications of this Towne'. And finally in February 1647, Lawrence was once again called upon, this time to obtain labourers to demolish and pull down the castle walls.

Subsisting within a fortified environment became the daily way of life for many in the towns, cities, fortified garrisons and castles during the war and it is true to say that a siege mentality permeated the very fabric of society. Fortifications became part of the culture of the war and the social



The fortifications around Donnington Castle, Berkshire, from Grosse's *Military Antiquities*. Royalist forces constructed an irregular fortification of banks, ditches and bastions. While it held the Parliamentarians at bay for several months, it did not prevent the massive bombardment that devastated the castle.

consciousness. They came to symbolise the very nature of civic mindedness. Civilians toiled daily on the works and the economy of many places suffered greatly. Large sums of money were raised from taxes that placed a heavy burden on many towns. Defense and the protection of citizens became the overiding objective of town governments. Particulary as these aims would also preserve their civic rights and religious freeedoms. For the Royalists, it meant keeping the 'rebels' at bay; while for the Parliamentarians, it was a means of preserving themselves from 'malignants' and 'papists'. Writers of tracts and pamphlets emphasised the importance of fortifications and often made a play on words: 'Nature ... hath given all creatures a naturall instinct to fortifie and preserve themselves ... man is fortified by his inward vertues and spiritual graces ... [he is] fortified in his own person,' and so on. And the vocabulary of fortification came to take on other meanings. People spoke of 'salient' points, of being 'ensconced', 'entrenched', and a 'bulwark' or 'bastion' of strength. The London fortifications came to serve as a convenient delineation and people spoke of living within the 'lines'.

Actual accounts of civilians serving at the fortifications are rare, but one that does survive is the testimony of Jone [sic] Batten of Bristol. She was one of 200 women who went to the Parliamentarian commander, Colonel John Fiennes:

> offering themselves to Worke in the Fortifications in the very face of the Enemy, and to go themselves and their children, into the mouth of the



Earthen bastions constructed by the Royalist garrison in 1643 in front of the gatehouse at Donnington Castle near Newbury, Berkshire. It is quite probable that such earthworks were surmounted with wooden palisades and other obstacles.

Canon to dead and keepe off the shot from the Souldiers ... and presently the same day, being Wednesday [26 July 1643] a message was brought from the Governour Colonell Nathaniel Fiennes to the said women, Commanding them to go to Froome Gate, and there make a Bulwarke of earth, which by direction of the Engineer they did, this Deponent being one of them. But while they were at worke and had almost finished the said Bulwarke (being about 15 or 16 foote thick) the Treaty was in agitation, and concluded upon, to their great griefe.

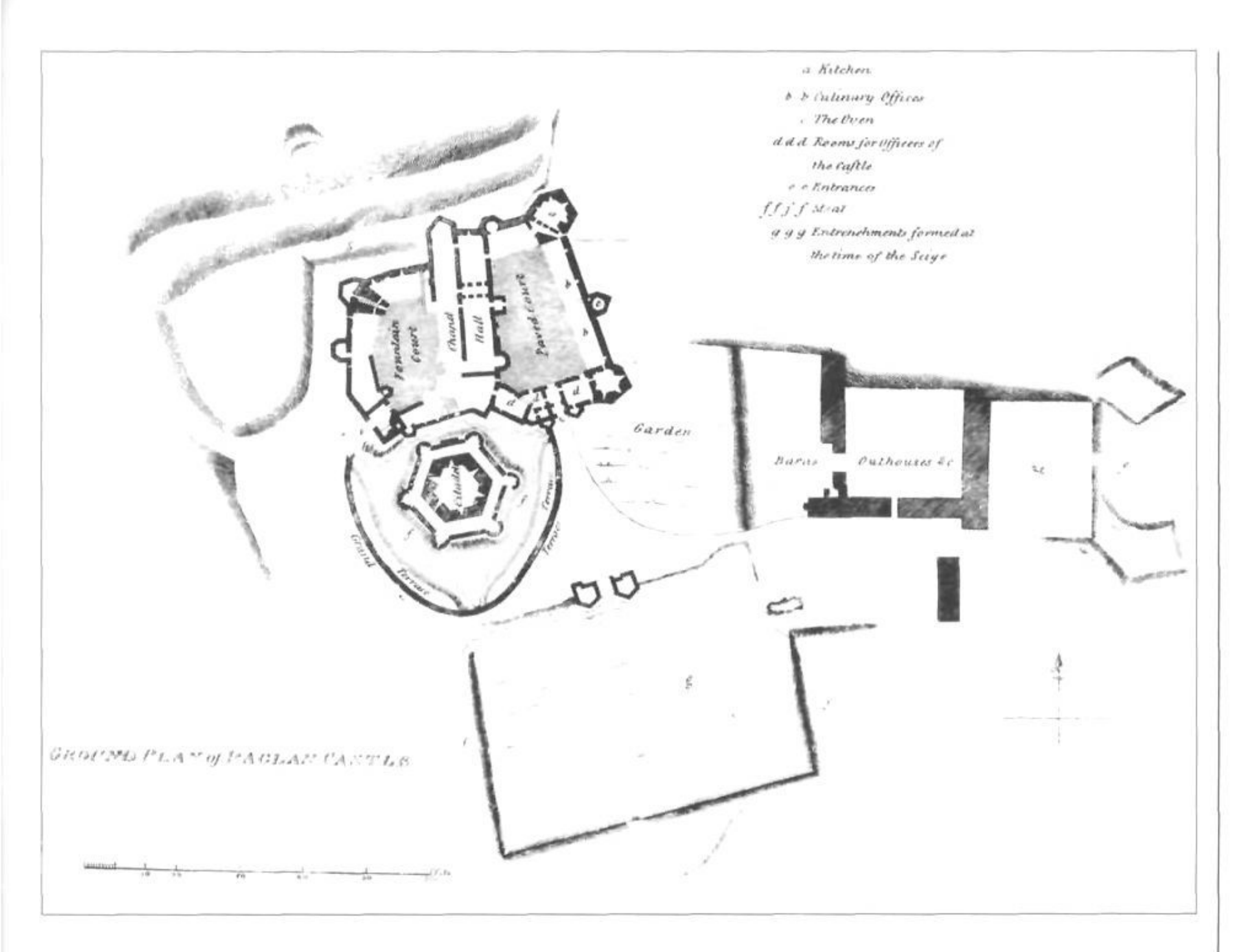
Another lady of Bristol, Dorothy Hassard, further stated that when some enemy troops were threatening the defences, she along with the other women took woolsacks and earth to block-up the Froome gate. Not all such work was apparently voluntary as a Parliamentarian pamphleteer noted for Reading in April 1643 after breaches had been made: 'The Cavaliers force women and children to fill them again.'

Accounts of the campaigns are strewn with descriptions of fortifications built by attackers and besieged alike. Reports from commanders conducting sieges frequently make reference to the construction of fortifications. From Sir Thomas Fairfax's headquarters outside Colchester in 1648 comes the following typical example: 'We have now almost finished our work on the hill a little above the waterhouse, within musket shot of the town, and it commands the High Street.' Nathan Drake, a soldier in the Royalist garrison at Pontefract Castle, Yorkshire, observed the activities of the besieging Parliamentarian force during the second siege of the castle in 1645, and frequently made references to the siegeworks being constructed. For instance, on 1 May he noted: 'The enemy releeved their trenches on Baghill very yearly, with (as we supposed) 150 men, where they had made a Triangle worke, and walled it with stone, and filled it with earth.' On another occasion, he wrote: 'This day the enemy made a new worke on Minkhill in manner of a haulph moon, to prevent us from sallying forth out of Swillinton tower.'

Earthwork fortifications were naturally prone to erosion and wear and tear, either from the elements or from warfare. It was a never-ending task to maintain their upkeep, not to mention the continuous need to expand defences or build new ones. The pamplets and broadsheets of the period contain numerous accounts of this work. One example described the situation at Plymouth in January 1643/4:

> our great care was, and still is, to fortifie the Towne, in pulling down Hedges, without our Works, in repairing decayed and ruined Out-works, in building new, where they are wanting, and running Breastworks from worke to worke: Two new works are made, two repaired that fell down Decemb. 25 at night, the very night, after the enemy removed the strait siege, and let not the world wonder, that we lay still a month, without encounters, when we had so many hundred hedges, to pull down, and 3 miles of ground, to be new fortified against the Enemy, besides the sleighting of the Enemies works.

Contemporary military thought deemed it of vital importance that besieging forces be properly fortified against sudden attack from relieving forces or from the besieged garrison sallying out. All commanders knew this but the subject could be very sensitive as correspondence concerning the Parliamentarian forces laying siege to Chester in 1645 suggests. One officer writing to the



Plan of Raglan Castle from Coxe's *Historical Tour of Monmouthshire* (1801) showing the 'entrenchments formed at the time of the siege'. Raglan was described in 1645 as 'beautiful to behold, yet made stronger much by art, being pallizado'd & fortify'd by a double work'.

Parliamentarian commander, Sir William Brereton, raised this issue in April 1645: 'I saw a letter from one Mr. Joh [Capt. John Jones] of 14 April which informed that you had not put spade in ground nor made any defence for yourselves or other work about Chester, but that they [your forces] did still lie in loose and open quarters.' One of Brereton's aides acknowledged that 'our remote quarters are not made defensible after the Low Country manner', but that he considered no city in England 'hath been closier [sic] blocked up' than Chester. Brereton himself responded to these 'unjust aspersions secretly vented against me' by outlining the offensive accomplishments of his limited forces including the fortifications around Hawardon Castle, and the defensive works around various outlying garrisons.

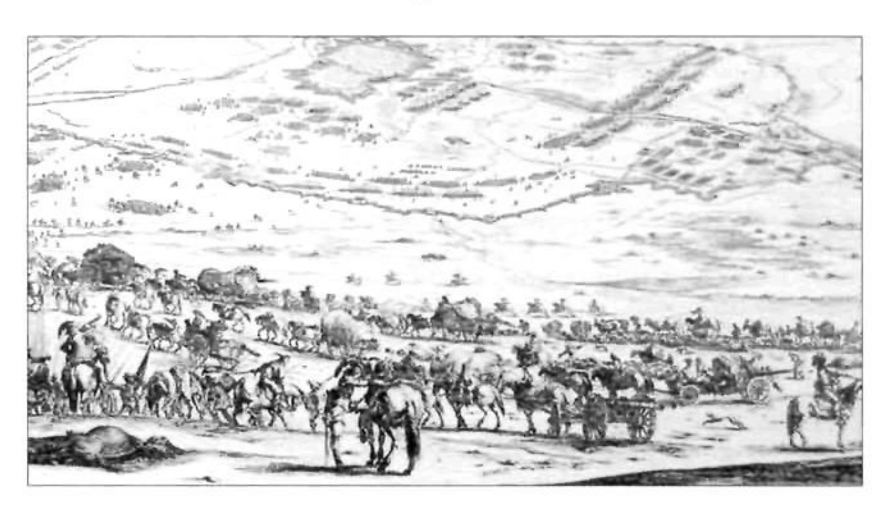
The construction of siegeworks is also revealed in contemporary accounts and reports. The Parliamentarian soldier and writer Joshua Sprigge described the situation before Raglan Castle in August 1646 where Parliamentarian forces under the command of Sir Thomas Fairfax were besieging the massive stronghold of the Marquis of Worcester: 'Our Approaches went on towards the Castle, our maine Work was some sixty yards from theirs, we had planted four Mortar-pieces in one place, and two Mortar-pieces at another'. Fairfax visited the trenches daily and on 14 August 'appointed a new approach, which the Engineer, Captaine Hooper, had so farre proceeded in as to throw up approaches of an hundred yards in circuit, making exacting running Trenches, so secure, as if they were Works against a storm, coming within sixty yards of their Works'. So formidable were the approaching siegeworks and the huge 7,000-man besieging force arrayed against the castle that the Marquis had little alternative but to open surrender negotiations the next day.

The sites in war

By speedy marches were advanc'd
Up to the fort where he ensconc'd;
And all the avenues had possess'd
About the place, from east to west.
That done, a while they made a halt,
To view the ground, and where t'assault:
Then call'd a council, which was best,
By siege or onslaught, to invest
The enemy; and 'twas agreed,
By storm and onslaught to proceed.
This b'ing resolv'd, in comely sort
They now drew up t'attack the fort;
Hudibras

There was very little use for field fortifications in the pitched battles of the Civil War (a few small earthwork defences were hastily constructed before some battles), so most of the operational history of fortifications is focused on defences built around towns, castles and country houses; and the siegeworks built against them. Every place presented a different set of conditions demanding a range of responses from defenders and attackers alike.

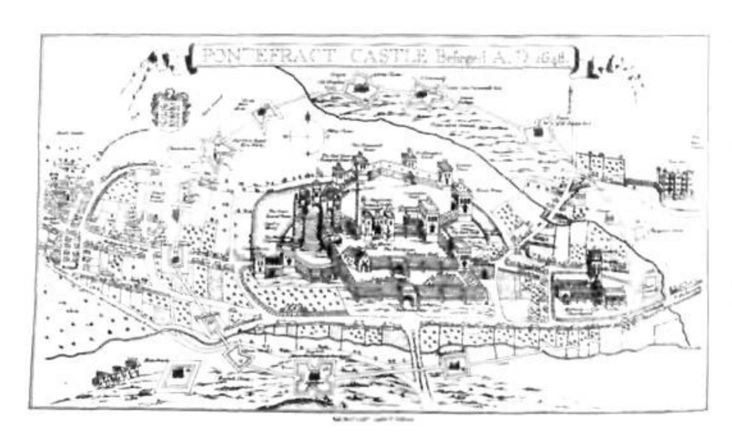
One cannot evaluate period fortifications without taking into consideration a variety of circumstances such as the availability of engineers or persons knowledgeable in military science, the time available for construction, money to cover costs of building and maintenance, and the availability of a workforce to build them. Other critical factors included the topography of the site, soil type and depth, and the weather conditions. The number of troops available for garrisoning or attacking fortified places, not to mention the weapons available and whether there was an adequate supply of shot and powder, all had a major influence. Similarly the supply of entrenching tools was paramount. And obviously the supply of water and food could affect the outcome of a siege. Even if the right circumstances prevailed, a commander might, for instance, site his guns poorly; or an engineer fail to fortify correctly. These and many other factors could determine the outcome of a siege.



Besides a painting of the siege of Oxford, there are no contemporary illustrations of Civil War sieges. However, contemporary scenes from the Continent such as this engraving of the siege of Arras, France, in 1641 provide some clues as to the appearance of a mid-17th-century siege.

A comment in a contemporary letter illustrates some of these shortfalls. Lieut. Col. Jones, a Parliamentarian officer, writing to his superior Sir William Brereton in May 1645, despaired that 'were there spades to entrench and victuals for the soldiers or a sufficient strength of horse to make provision for the foot, there were no reason to raise the sieges [of Chester and Hawarden Castle]'.

The final, and perhaps most significant, factors were intangibles such as morale, leadership, ability and skill, loyalty, or the lack of, and motivation. Any one of these factors and those above could play a critical role in determining the effectiveness of defensive as well as offensive fortifications.



ABOVE The Parliamentarian siegeworks built around Pontefract Castle, Yorkshire, in 1648, from an engraving published in the 19th century. A complete circumvallation encircled the castle linking a variety of earthwork forts, hornworks and batteries.

Contemporary siege accounts, notwithstanding their occasional bias or distortion, provide some clues to the success or failure of fortifications, but as every siege was different, no clear pattern emerges. This makes an overall assessment of the effectiveness of Civil War fortifications difficult. In some cases, a site that appeared well fortified might have been taken quickly, while a similar place with inferior fortifications might have withstood a lengthy siege. Some places that had virtually no 'modern' outworks were able to fend off attack for weeks or months. Clearly one cannot generalise about fortified places and each must be considered on a case-by-case basis that is beyond the scope of the present work.

What do contemporary writers have to say about fortified sites during the war? Subsequent English authors of fortification studies such as Thomas Venn and John Cruso fail to make mention of the English works, preferring instead to use continental examples. The Parliamentarian veteran and 'Master Gunner of the City of Worcester', Nathaniel Nye, in his *Art of Gunney* of 1670 makes a brief mention of the 'Leaguer' before Worcester and his artillery observations of various structures and fortifications in the city but does not provide any assessment. The notorious Parliamentarian pamphleteer William Prynne, who suffered the indignity or having both ears cut off for various comments against officialdom and was imprisoned in Pendennis Castle during the Protectorate wrote a lengthy diatribe in 1658 shortly after his release, in which he attempted to downplay the effectiveness of fortified places in wartime. Echoing the earlier sentiments of Sir John Meldrum, he stated categorically that fortified places attracted trouble. Fortifications, he said, were 'despicable, worthless, barren Hills, or Clods of Earth, scarce worth two hundred pounds a yeer', and he proceeded to recount the miseries that fortified places endured in wartime and the economic and physical disasters they created. He singled out Bristol and Hereford as places that had spent considerable amounts of time and money on fortifications, yet were taken within a few days or hours. He criticised the deliberate destruction of the suburbs of Bristol, Exeter, Taunton, Lincoln, York and Colchester for the sake of better defence. He noted that many houses, small garrisons and castles that suffered total demolition, and suggested that had Raglan Castle, Basing House, Rowden House, Camden House, Lichfield Close,

BELOW Basing House, Hampshire, a place described in a soldier's report of November 1643 as 'very strongly fortified ... strongly walled about with earth raised against the walls, of such a thickness, that it is able to de'd the greatest Cannon bullet'. (Photo: Cambridge University)

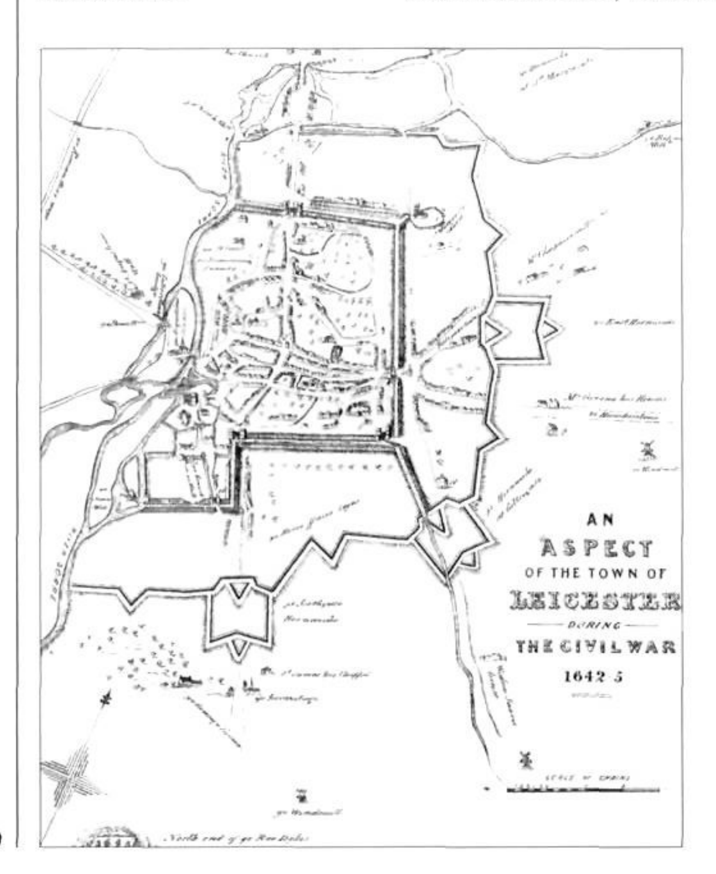


Banbury and Pontefract Castle not been fortified and garrisoned, they would all have escaped.

Next he listed Plymouth, Exeter, Lyme Regis, Taunton, Bristol, Gloucester, Worcester, Oxford, York and Hull as places that had endured multiple sieges. And because some places like Bristol and Exeter were taken and re-taken, Prynne argued that they suffered even more, and notes that of all the places besieged during the war, only Gloucester, Hull and Lyme Regis escaped being taken. He concludes that fortified places contributed to the length of the conflict and without them, the Civil War would have been over in less than half the time.

Prynne was a non-combatant during the war but his ideas cannot be dismissed outright. In contrast was David Papillon, who did participate as an engineer and was a proponent of fortifications. Writing at the end of 1645 while the war was still in progress, he lays the blame for the failure of some fortified places more on the inability of the defence committees and governors in not providing enough ammunition, food, and equipment to withstand a siege. He noted that the Royalists were more 'provident' and gave as examples the long resistance of Basing House, Lathom House, Carlisle, Skipton and Scarborough Castles, and Chester. He went on to suggest that had the Parliamentarians created entrenched camps before Newark, and the castles of Dudley, Pontefract, Banbury and Donnington, they would not have been forced to raise their sieges. 'If we had been in an intrenched Camp, an Army six times as great could not have forced us to a retreat.' This failure prolonged the war in Papillon's estimation. He agreed with Prynne in his criticism of the destruction of suburbs but for different reasons. Using the failure of Leicester as an example, he argued that keeping suburbs only added to the strength of the defensive cordons because the houses could be turned into bulwarks that required less men to defend. This town was singled out for further criticism for its failure to include some rising ground within its 'Line of Communication', which contributed to the loss of the place. Another example used by Papillon was Northampton, where the citizens proposed to destroy the hamlet of Cotton End should the town be threatened. He again cautioned against this, suggesting as an alternative that the houses in the hamlet should be turned into defensive bulwarks, making that side of the town impregnable.

A 19th-century plan of the fortifications built at Leicester in 1643 as they might have appeared in the Civil War. The angular outworks can be distinguished from the old walls of the medieval town. Three distinctive hornworks project from these outworks.



Some places were successful simply because they were so well fortified that they deterred any would-be attackers. London and Oxford, the respective capitals of the belligerents, were probably the best examples of this, although Oxford did experience being 'blocked-up' and besieged on two occasions. Throughout the war, the defences of London were never tested but this was more due to the failure of the Royalist armies to get within striking distance of the capital after 1642. The Royalists were aware of the extent of the fortifications and how formidable a task it would be to overcome them. Spies were passing in an out of the capital and there was a rumour widely circulated that Prince Rupert had come to the City himself 'disguised like a woman, and viewed all the several workes and trenches'.

Had the Royalists been able to approach the defences of London, how successful would they have been in breaching them? The evidence from Bristol, a similar Parliamentarian-defended place, might provide some evidence. Like the

capital, its defences consisted of forts connected by an earthen bank and ditch that stretched for over five miles. And therein lay the problem, for Bristol had only 1,500 men to defend this long perimeter. The Royalists were able to break into this line in 1643 and capture the city. Realising the need for a larger garrison, they immediately set about increasing the number of men available and refortifying the place, but by September 1645 when the Parliamentarian New Model Army attacked, the garrison had dwindled to around 1,000 men and was easily overcome. This would have been London's Achilles' heel had it been attacked. With a vast perimeter of over 11 miles in length, the city would have been most difficult to defend, as the Venetian ambassador noted in 1643. Papillon himself was very critical of the London defensive perimeter, suggesting that 'having at every two hundred and fifty yards distance an Angle to forme a strong, complete, and defensible Bastion' would have been preferable to the 'sleight, winding Angles, and ill flanked Redouts, wherewith it is now fortified'. Also a single bank 'is farre safer' than the small double ditch with a 2ft bank between built around London.

The fortifications constructed around Oxford by the Dutch engineer Bernard de Gomme were viewed as impressive by the enemy, although the Royalists took measures to prevent full knowledge of them from creeping out, as the captured Parliamentarian officer Edmund Ludlow found when he was 'led blindfold through the city of Oxford till I had passed their works'. In July 1644, the Parliamentarian general Sir William Waller wrote from Abingdon to the Committee of Both Kingdoms on the situation at Oxford:

> I find Oxford much stronger fortified that it was when I was here last; the new works being finished, and the whole north side pallisadoed, so that contrary to my expectation there was no way left to take it, but by approach or blocking up, either at a near distance entrenching about it, or in a remote way by taking in the garrisons about it. The place is not difficult to be taken any of these ways.

Beyond London and Oxford, most towns and cities were besieged at one time or another, as Prynne noted, and few were able to withstand enemy attacks for prolonged periods. In some cases fortifications held the enemy at bay, as at Newark in early 1644, or were enough to force the enemy to invest a place rather than storm it. The new Royalist defences at Exeter, consisting of a new circuit containing three large forts and a ditch 7ft deep, deterred an attack by the Parliamentarians in the autumn of 1645. Similarly, when they came before heavily fortified Newark around the same time, the Parliamentarians decided to invest the place with siegeworks rather than attempt a storm. It was only by stranglehold that the town was eventually forced to surrender in May 1646.

It has been suggested that few Civil War sieges ended in a successful storming but many places endured the sufferings of them. Edmund Ludlow himself, prior to his capture, led a determined effort to withstand a Royalist siege at Wardour Castle in Gloucester, and later described his experiences. From the battlements of the castle he observed the Royalists raising a battery but as the guns in this failed to effect much damage, the enemy decided to try to bring the walls down by explosives. 'They brought together about two dozen of oaken planks three inches thick, which they endeavoured in a dark night to set up against the castle wall,' but they were discovered. The Royalists then began to dig but were discovered and the garrison threw down hot water and melted lead but with little success. Hand-grenades finally dislodged them. 'We obliged them to quit their work, and to leave their tools behind them ... their trenches not being finished to secure their approach to the outhouses.' Eventually, the Royalists achieved success when miners were able to burrow under the walls and detonated explosives that rocked the place. Ludlow and his garrison finally were forced to surrender.

Ludlow also recounts a treacherous act involving fortifications. Parliament had decided to fortify Abingdon in Oxfordshire. Secretly, the Parliamentarian governor Colonel Brown was in correspondence with the Royalist Lord Digby, secretary to the king. Brown 'promised him that, so soon as he had finished the fortifications, and received all things necessary from the Parliament to defend it, he would deliver it to the king; by which means he kept the king's forces from interrupting him till he had perfected the work.' At the last minute, Brown changed his mind, infuriating Digby, who proceeded to publish their correspondence. Treachery was also to blame for the fall of several places including Corfe Castle, Dorset, and Beeston Castle, Cheshire.

Accounts of sieges and attacks upon places contain numerous references to fortifications. In September 1643 we read that the Royalists were about a mile from the town of Hull and had 'cast up several works against the Towne, and planted divers pieces of batteries in them and daily make many shots against it'. Another example is Plymouth, which was described in a pamphlet published in London in 1644 entitled *A True Narration of the most observable passages, in and at the late Siege of Plymouth, from the fifteenth day of September 1643, untill the twenty fist of December following* ... The following excerpts will serve to give an idea of a use of fortifications during a Civil War siege.Early on, the Royalists:



The fortifications constructed around Newark. This plan clearly shows the circumvallation connecting 'redoubts' and 'bulwarks' along with several major fortified camps such as 'Edinburgh' and 'Coll. Henry Grayes quarter'. The Queen's Sconce is marked '7'. (Photo: Ashmolean Museum, Oxford)

> raised a square Work within pistoll shot of our Fort of Stamford, on the North-east side, and from thence were drawing of a Line with Halfe Moones to surround the said Fort, thereby to hinder our reliefs from coming unto it. To prevent which, the same day we fell on the Enemy in their New Worke they had raised ... we got their Halfe Moone, and after three houres hot fight, their close Worke, and in it Captaine White and fifty other prisoners: in which Work we put a Guard that night of thirty Musquetires.

The Royalists were able to retake this work through treachery but once again were driven out. The writer continues:

> After we had gained the Enemies Worke the second time we slighted it: but to prevent the like approaches, in regard Mount Stanford being a small Worke, and very untenable of itselfe, much less to keepe so large a circuit of ground as it was built to defend, we were necessitated to draw a Line of Communication both on the East and West side of the Worke, to maintain a long ridge of ground, with Halfe Moones at each end of the Line, which we defended diverse dayes with extraordinary duty to our men, and divers skirmishes with the Enemy, till the third of November, when the Enemy planted their Batteries within Pistoll shot of our Forts; and on the fifth of November battered our Worke with two hundred Demy-Cannon and whole Culverin shots, besides other smaller Cannon that continually played on us, and flanked our Line from Osan Hill, whereby breach was made in the Fort at severall places ... the breach we repaired in the night, thickening the Rampart as much as the smallnesse of our work would admit, and strengthened the weakest places with Woolpackes; The next day they continued their Battery till noone, with too much successe, yet so as no considerable beach was made that day: the enemy whither they had intelligence of the want of provisions and Ammunition in the Fort, about

one of the clock fell on with horse and Foot on our Half-moons & Line, where we had reasonable guard: but tired with eight daies duty and long watching after an hours skirmish were enforced to retreat from the Half-moon and Breast work, and were taken by the enemies Horfe who came on the backs of them.

Day after day, the siege continued in this to and fro manner with attacks and counter-attacks upon the respective fortifications, and the building and rebuilding of earthwork fortifications, but the town held and was never taken by the Royalists.

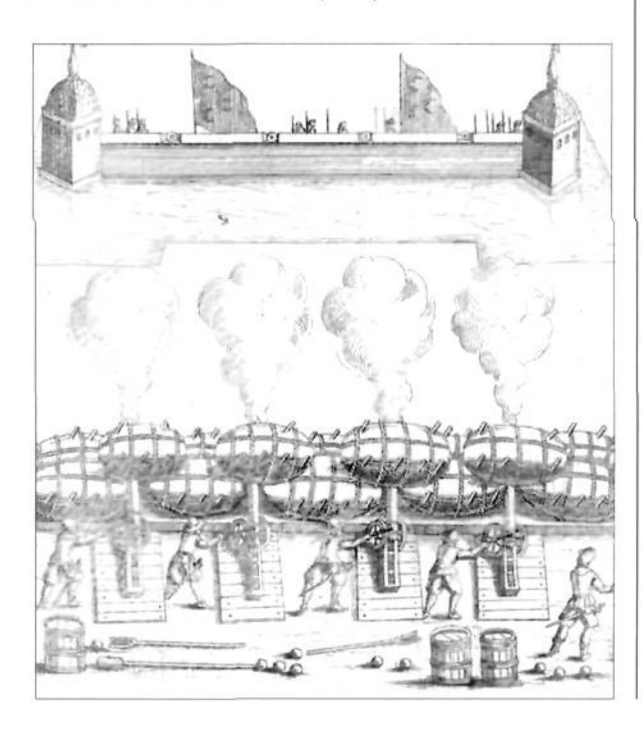
Gloucester was another city that was able to fend off Royalist attacks throughout the war, although had a Parliamentarian relief force not arrived in 1643 the city might well have fallen. Nonetheless, the city's defences were a factor. With the River Severn serving as a defensive barrier on one side, earthworks were constructed with five bastions on two other sides. The earth for these bastions was excavated creating a ditch as deep as 12ft in some places and around 30ft wide. Water was diverted into the ditch, creating a formidable moat. With these combined water-formed defences, the city was approachable only from the south-east, but any would-be attacker would be faced with the 30ft medieval wall backed with earth. In front of the wall was a 15ft ditch. The Royalists attempted to batter and mine the wall and were almost at the point of success when the Earl of Essex's Parliamentarian force showed up.

John Dorney, town clerk of Gloucester, collected accounts of the Royalist siege of 1643 and these make several references to the fortifications. On 6 August, he noted that 'this day we wrought hard in the amending and repairing of our Bulwarkes', and several days later wrote that 'our Women and Maides wrought all this after-noone in the little meade out of our workes in the very faces of those houses, in fetching Turfe for the repairing of our workes: we were forced now through want of men for the guarding of the City it selfe'. Due to the lack of men, two sconces had to be evacuated. On the 11th, Dorney noted that the Royalists had begun to dig entrenchments on the south and east of the city within musket shot of the city walls. Several members of the garrison sallied out and beat the enemy from their trenches 'and brought away many of their Shovels and Pickaxes'. There is a reference to the 'lining of our Towne walls from the South to the East gate' with earth in response to a threat from a Royalist battery. The South port was blocked up and a 'damme' of earth was built against the drawbridge; earth was also piled up by houses between the gate and the drawbridge.

When the Royalists started to batter the wall, the citizens blocked up the breaches with woolpacks and cannon-baskets. A Royalist attempt to fill in the moat with bundles of faggots was beaten off by musketeers on the wall. The garrison were constantly building breastworks to block up access to the city and piling earth against walls to absorb cannon fire. A sconce was constructed to provide cover for any attack in the Fryar's Orchard section of the city.

Some places surrendered with just the threat of attack and the appearance of siegeworks. The Royalist Sir Henry Slingsby gives an account of the proceedings before Hawkesly House, Worcestershire, a Parliamentarian garrison in 1645. A summons to surrender was sent in but, following its refusal, the army was commanded to 'sit down before it' and began to dig trenches. In a short time, their line was close to the moat and, using trenches, they were able to drain it. Following

An engraving from *La Castramentation* (1618) showing cannon in a battery using woolpacks for cover. The use of wool for defensive purposes is documented at several places during the war. Woolpacks could absorb bullets with ease and were available in quantity.





The storming of Basing House
Several fortified places, such as Basing House in Hampshire, were captured by storm. After besieging the place, the attackers began to dig trenches towards the walls. As they moved closer, batteries of cannon began to bombard the walls to create a breach. Once this was achieved, an assault was made with troops charging towards the breach. The Parliamentarians under the command of Oliver Cromwell stormed Basing House on 14 October 1645.

a shot or two, the besieged garrison called for a parley and surrendered. It was all over within two days. After the house was plundered, it was set on fire to render it useless.

Many of the lengthiest sieges occurred around fortified garrisons, the most notable being at Lathom House, Lancashire, Corfe Castle, Dorset, and Basing House, Hampshire. The question can be asked whether the outworks constructed during the war at some of these places contributed to the ability of the defenders to resist assault for so long. One can immediately dismiss Corfe for the beleaguered garrison never constructed defences beyond the walls of the castle and the only steps that were taken was the construction of a battery within the castle, along with the packing of earth against the walls. In this case, the siting of the castle high up on a natural rise made it difficult both for the Parliamentarian batteries to bring their guns to bear and for mining operations to be carried out. The resolution of the garrison under Lady Bankes and the failure of the Parliamentarians to bring enough resources to achieve victory also ensured that this siege dragged on for many months.



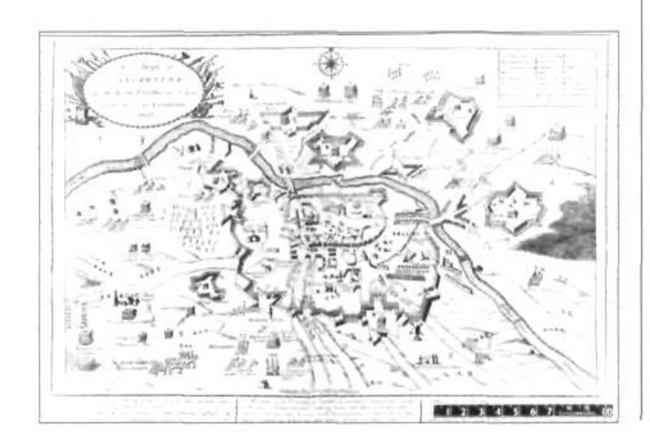
An engraving of the siege of Tournay, France, in 1667, showing the operations of a typical 17th-century siege with musketeers and pikeman entering the approach trenches. At the end of the trench, soldiers carry bundles of wood to make blinds for cover.

Lathom and Basing were defended with earthworks but once again the determination of the garrison to fend off attack was more important than the strength of the outworks. At Lathom, repeated sallies against the Parliamentarian besiegers damaged or destroyed their siegeworks, while earth piled up against the walls absorbed the cannon shot. Palisades were constructed on both sides of the moat that surrounded the building, which had 6ft-thick walls supported by nine towers.

Many ageing castles proved remarkably resilient against modern artillery and were able to hold the enemy at bay for some time. Hawarden Castle in Flintshire provides one example. The 13th-century castle sitting atop an old motte was able to withstand two sieges against it without the luxury of earthen defences. The Parliamentarian besiegers in 1645 dug a circumvallation completely around the place and commenced mining operations and the construction of batteries. Mining failed to make an impasse and breaches caused by Parliamentarian ordnance were stopped-up by the garrison. This caused fear and frustration among the attacking troops and eventually the siege was raised. In the following year, the place withstood a ten-week siege before it was forced to surrender in March 1646.

Were offensive fortifications superior to defensive fortifications? Once again, it is difficult to generalise. Towards the end of the war in 1645/46 and in the second phase in 1648, the better-trained New Model Army was able to bring sieges to a successful conclusion. The Parliamentarian cordons around Colchester and Newark created strangleholds that forced both places to surrender, but in these cases the besieging forces were adequately supplied with men and equipment to see the job through. In smaller sieges, the besieged garrisons were frequently able to sally out and destroy the siegeworks.

In summary, the temporary fortifications built during the British Civil Wars provided more of a psychological than a physical barrier. With enough resources, they could be easily overwhelmed but such resources were rarely available.



'The Siege of Colchester by the Lord Fairfax', from a contemporary broadside describing the siege. The Parliamentarian line of circumvallation can be seen linking various sconces, while outside the line are several large fortified camps. (Photo: British Museum)

Aftermath

Is this the end of all the toil,
And labour of the Town?
And did our Bulwarks rise so high
Thus low to tumble down?
These Bulwarks stood for Popery,

And yet we never fear'd um,
And now they worship and fall down,
Before those Calves that rear'd 'um.

['On the demolishing of Forts', 1662]

The main phase of the first Civil War came to an end in 1646 when Charles I surrendered to the Scots at Newark. Peace had finally arrived but it was short-lived. The second Civil War, which broke out in 1648, had little effect on the majority of towns, however, as did the final uprising of 1651, which ended with the defeat of Charles II at Worcester. The insularity that towns had felt for almost a decade of warfare was finally removed.

As we have seen, the fortifications built during the Civil War had a psychological as well as physical impact on the belligerents and civilians caught up in the fighting. On the one hand, earth and masonry barricades offered physical security, but they could also be a liability. It was a clear dichotomy, for places with defences ran a greater risk of being attacked. Without them, however, places could be taken easily , although without force and the resulting loss of life. There are numerous contemporary reports stating that a particular place was being fortified and that it could present problems. For example, in November 1645 a report to the Committee of Both Kingdoms at Derby House in London reflects this alarm: 'We are informed that the enemy is fortifying two houses near Salisbury, viz. at Wilton and Goldbourne, which if they be perfected will be of great prejudice to those parts.' The possession of fortifications was viewed as a direct threat. This explains why fortifications were frequently slighted to make them unusable for future use by the enemy, and surrender terms often demanded that defences be demolished. As early as March 1642/3, the Parliamentary commissioners sent to Oxford to attempt a negotiated peace with the king demanded that fortifications recently built in certain places be removed. The articles for the surrender of Tutbury Castle in Herefordshire in April 1646 included the following demand: 'That all fortifications in and about the castle of Titbury [sic] be slighted, and the House being made uncapable of being a garrison.'

Fortifying places was viewed by some as a threat to achieving peace. An interesting statement submitted to the Committee of Both Kingdoms by the Parliamentary general Sir John Meldrum in November 1644 suggests that it is 'both dangerous and unprofitable to this State, which is to keep up forts and garrisons, which may rather foment than finish a war'. He went on to use the examples of France, Italy and the Low Countries as places that had endured 300 years of warfare 'entailed by places being fortified', whereas Britain had lived in relative peace because of the lack of fortified places. As Meldrum said himself:

> if Gainsborough had not been razed by my order, the enemy might have found a nest to have hatched much mischief at this time. Reading might have produced the same effects if the fortifications had not been demolished. If there be a garrison kept at Liverpool, there must be at least 300 men, which will make the jealousies and emulations amongst those gentlemen endless and charitable.

The vast majority of temporary fortifications were demolished or 'slighted' after the first phase of the war in 1646. On 2 March, the House of Commons passed resolutions for the slighting of fortifications in a number of places, although this was not always carried out due either to apathy or the fear of future attack. An order in the House Books for York dated 21 April 1645 has the following entry:

> Ordered that the Inhabitants of Ruffurth, Knapton and Hessey shall demolish the works in Houlgate and the breastworks in Bishoppfields on Fryday next ... and every householder of St Sampson's and St Savour's parishes to send an able person with spades or shovels to worke there all that day and 12 men likewise to be hired to work there with spades.

In 1647, by order of Parliament, the outer defences of Bristol were 'slighted', except Fort Royal, which was destroyed in 1655.

As for London, the defences were finally put to a test in August 1647 when the army under Fairfax marched on the capital to address the troops' various grievances. The occupation by Parliament's army was viewed as the ultimate failure of the defences even though no shots were fired. Shortly after, the fortifications in London were removed, which was cause for rejoicing. The contemporary lines at the head of this chapter are taken from a passage entitled 'On the demolishing of Forts', which appeared in a poem published after the Restoration but reflective of attitudes prevailing in the country at the end of the war. There was even a satirical pamphlet published in late November 1647 entitled *Articles of High Treason exhibited against the Fort-Royall, with all other the Horn-works and Breast-works about the Citie*, in which the fortifications were 'accused' of treachery; that they endeavoured to 'forment and prosecute a New and bloody War' by keeping the king from his Parliament, from his children, and adding to the ruin of the economy. They were 'sentenced' to be demolished.

People wanted to erase all evidence of the war and forget the horrors of the fighting, while the government decided to neutralise any places that might be occupied by adherents to the Royalist cause. Many castles were demolished or made untenable. Raglan, Corfe and Ashby de la Zouch castles were examples of strongholds slighted by the use of gunpowder charges placed under towers. However, in other cases the order to slight a place was not carried out.

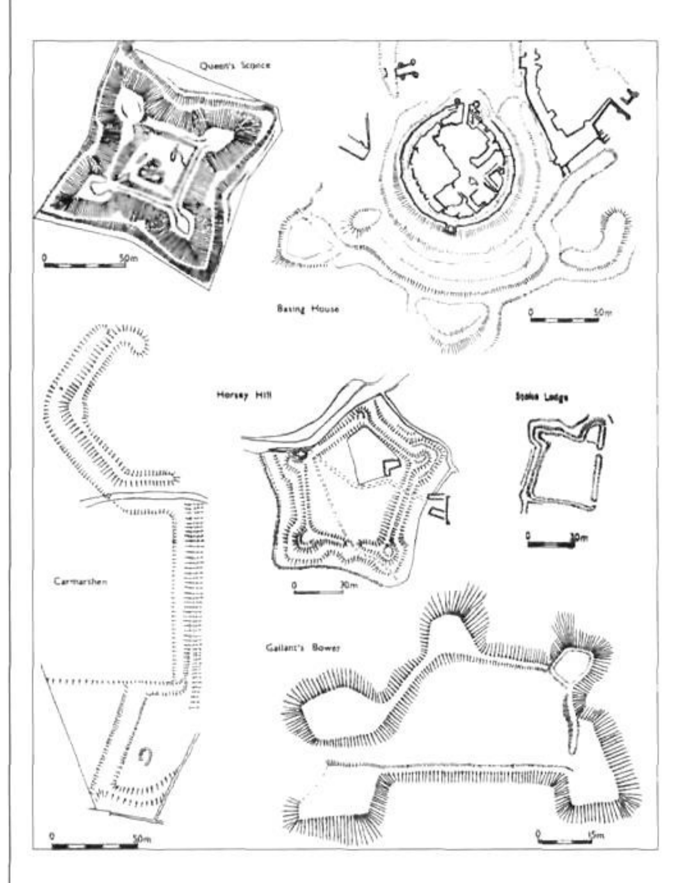
Parliament could not rest on its laurels, however, for its final victory in 1651 brought with it renewed threats from within as well as from the Continent. As a result, new fortifications were constructed to confront the perceived threats. Scotland was forcibly united in a union with Protectorate England in February 1652, and in order to pacify that country a series of imposing masonry fortresses was constructed at Ayr, Inverness, Perth (St Johnston) and Leith, places deemed of strategic value. Smaller forts were built elsewhere around the country. These citadels were expected to offer 'a great deale of benefitt to your highnesse, besides the securite of the place and the advantage wee may have by laying fewer men there, if any troubles should be', as General Monck, the military governor of Scotland, put it. No expense was spared in building these larger bastioned compounds. The regular pentagonal citadel at Inverness took five years to complete and included accommodation for 1,000 troops. The fort at Perth was oblong with bastions, while the citadel at Ayr was hexagonal in shape, covered an area of 27 acres and accommodated a garrison of 2,000. Not surprisingly, these citadels were demolished at the Restoration and little remains of them today. Forts were also built or planned for Ireland at places such as Dublin and Limerick, while Cromwell's Castle at Tresco, on the Scilly Isles, was built in 1651/2 to secure the islands from the threat from the Dutch fleet.

The domestic crisis of 1642–51 had been met but, with the peace came the destruction of the fortifications and over the centuries evidence of these defences, on which so much time and effort had been expended, has been almost erased. Today, it is slowly but surely being revealed by archaeology.

Extract from the *Journals of the House of Commons* for Thursday, 9 September 1647, describing the order for the slighting of the fortifications of London. Throughout 1647, the Commons had been passing resolutions to demolish many of the defences built during the war throughout the country.

WHereas the Committee of the Militia, *London*, appointed by Ordinance of Parliament the Second of this instant *September*, are directed, by several Ordinances of Parliament, then and since made, to cause the Forts and Lines of Communication to be forthwith slighted and demolished: For the better enabling of them to perform the said Work, it is *Ordained*, That all Housholders, and other Persons, within the Lines of Communication, and Parts adjacent, that are well-affected to the Freedom of Parliament and City, and Peace of the Kingdom, be and are hereby desired to begin on *Monday* next, and so to continue, to come, or send what Men they can, with Tools, to such Parts of the Line as they shall be, from time to time, directed, by the said Committee, to perform the said Work, till it be finished: And the several Committees of the Militia, which are or shall be established within the Limits aforesaid, are required to be assisting and assisting in the Doing thereof, in their respective Jurisdictions: And that this Ordinance be forthwith printed and published, the next Lord's Day, in the several Parish-Churches within the Lines of Communication, and weekly Bills of Mortality, by the respective Ministers thereof: Who are hereby required to take notice hereof, and proceed accordingly.

The sites today



ABOVE Surviving Civil War fortifications, showing the Queen's Sconce and Stoke Lodge at Newark, Gallant's Bower, Dartmouth, and Horsey Hill, Cambridgeshire, the defences around Basing House, Hampshire, and the remains of the Royalist defences at Carmarthen. (From Harrington, 1987)

Due to destruction during the war, intentional demolition ('slighting') after the war, and urbanisation in the 19th and 20th centuries, the vast majority of the fortifications built between 1642 and 1651 have not survived, although some have been located by archaeological excavation at Gloucester, Exeter, Chester and Plymouth. In a few cases, such as Newark-on-Trent, Bristol, York, Worcester, and Carmarthan, vestiges of the original town defences still exist as earthworks. Other sites in the countryside have suffered from agricultural practices and today several are visible as cropmarks only. Due to the very nature of many Civil War fortifications, i.e. hastily built of earth and not always reflecting contemporary principles, shapeless mounds and embankments around castles and other strategic locations might represent 17th-century fortifications. It is hard to tell in many cases, and excavation often reveals little, but more sites remain to be located and fieldwork, coupled with documentary research, might result in the identification of these earthworks as Civil War fortifications.

Few of the existing sites are signposted, although many have been scheduled as ancient monuments and are protected from further development. Archaeological excavations have been conducted at some sites. A few sites are



RIGHT The Queen's Sconce, a typical Civil War fort at Newark built as part of the exterior defences by the Royalists. This earthwork is the finest surviving fortification from the war. (Photograph: Cambridge University Collection)

marked on Ordnance Survey maps (reference numbers are given in brackets), like the well-preserved bastioned fort at Ballachurry on the Isle of Man, the two forts at Earith and Horsey Hill, Cambridgeshire, and the various sites around Newark. Examples of defensive works exist at several castles and manor houses such as the earthwork bastions attached to the circular *enceinte* at Basing House, Hampshire, and similar earthworks at Donnington Castle, near Newbury, and at Cambridge Castle.

Newark-on-Trent, Nottinghamshire, possesses by far the greatest surviving number of fortifications from the war, although, with the exception of the Queen's Sconce, many of these are difficult to locate on the ground and can only be determined from the air. As late as the 1880s, a King's Sconce lay on the opposite side of the town but this was subsequently destroyed.

The Queen's Sconce, Newark-on-Trent, Nottinghamshire (SK 791531)
Newark, lying on the old Great North Road where it crosses the River Trent, can be reached by train from King's Cross, London, or by car via the A1(M), which just bypasses the town. The old castle stands by the crossing point of the river and is a ruin today but played a significant role in the war. Shot marks from cannon balls fired by the Scots during the siege can be made out on the lower levels of the walls. Just less than 2 miles south of the town lies the Queen's Sconce, the finest Civil War fortification surviving in Britain. To reach the site, head south out of the town along the A46 and follow signs to Hawton (the site of another Civil War fortification). Turn right into Boundary Road near Albert Street. Just off the road is the signposted 'Sconce Hills Car Park'. The earthwork is across a playing field from the Sconce Hills Play Area.

Distant view of the Queen's Sconce, Newark-on-Trent, Nottinghamshire. The earthwork stands on the edge of public playing fields just outside the town. Two of the bastions can be seen with vegetation growing on them.



Restored in 1957, the bastions have since become rather overgrown with gorse but it is still an outstanding example of a 17th-century artillery fortification, and there are plans to do further restoration work on the site. The quarry ditches are still deep, 12–15ft, and in some places 70ft wide. The site covers an area just over 3 acres with four large projecting bastions. A large pit in the centre might be a later feature. A recent metal-detecting survey on nearby fields has produced large quantities of musket balls.

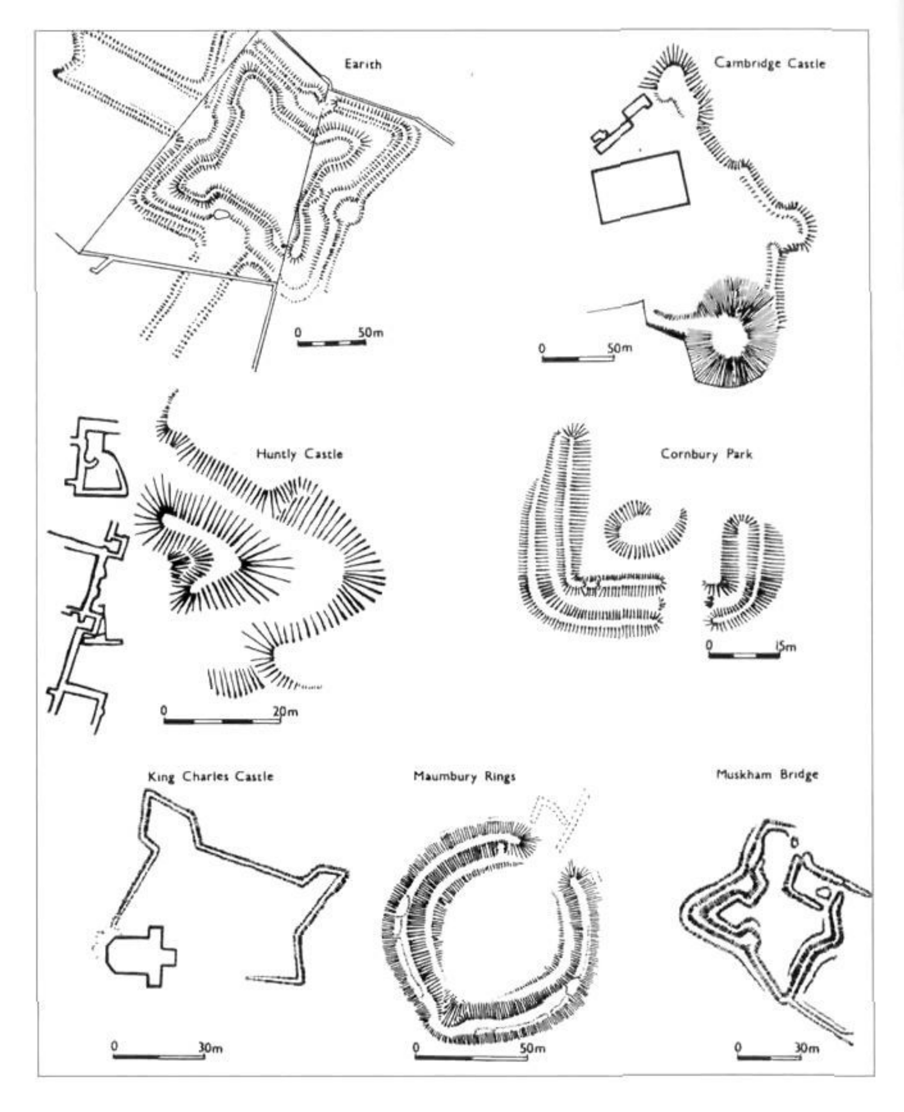
Accommodation can be found in the town. The Queen's Sconce is now administered by Newark and Sherwood District Council. For further information contact the council at Kelham Hall, Newark, Nottinghamshire NG23 5QX. There are no facilities at the site nor are there any signposts.



View of the Queen's Sconce showing the curtain connecting two of the bastions. These embankments were probably surmounted with sharpened palisades and possibly had storm poles projecting outward.

Gallant's Bower, Dartmouth, Devon (SX 884504)
Now administered by the National Trust, the site was restored in 1997 when many of the trees masking the earthwork were cut down. The fort was built by the Royalists to defend the town of Dartmouth from attack and sits on a hill above Dartmouth Castle overlooking the River Dart. It is situated just over a mile south-east of the town and can be reached by taking the B3205 road.

Surviving fortifications built around castles at Cambridge, Huntly and King's Charles Castle, Tresco on the Scilly Isles, the forts at Earith, Cambridgeshire, and Muskham Bridge, Newark, the battery at Cornbury Park, Oxfordshire, and the ramp built for cannon at the prehistoric site of Maumbury Rings, Dorchester, Dorset. (From Harrington, 1987)



It is a pentagonal earthwork fortification with a high curtain and five angular bastions. A twin fortification exists across the river at Kingswear. Named Mount Ridley, it is not as well preserved as a modern building named 'The Redoubt' sits atop the earthwork; this building is now subdivided into holiday apartments and public access to the site is restricted. Accommodation can be found in Dartmouth. English Heritage administers Dartmouth Castle and Bayard's Cove, an early-16th-century artillery fort. Details about access to Gallant's Bower can be obtained from the regional National Trust office, Killerton House, Broadclyst, Exeter EX5 3LE (Telephone: 01292 881691).

Brandon Hill, Bristol, Avon (ST 5797828)

On Brandon Hill, Bristol, may be seen the remains of a fort adjacent to Cabot Tower, and proceeding south, vestiges of an earth bank 1.2m high with small bastions, one with a half-moon outwork, and a larger bastion, known as the Water Fort, near Queen's Parade. The remains are in a public park.

Basing House, Basingstoke, Hampshire (SU 663527)

The site of one of the most famous sieges of the Civil War, the ruins of Basing House are today owned by Hampshire County Council and are open to the public. Extensive archaeological excavations have been conducted on the site

and considerable evidence about the siege has been uncovered. Material from these excavations is displayed at the site. The surviving earthwork fortifications built during the Civil War can be viewed from various places along the Basing House Trail. Nearby Basingstoke offers accommodation.

Donnington Castle, Newbury, Berkshire (SU 461694)

Donnington Castle lies 1½ miles north-west of Newbury, Berkshire, between the B4000 to Lambourn and the B4494 to Wantage. The castle, owned by English Heritage, is located on high ground commanding the former Great Bath Road and the old route from Southampton to Oxford. It was virtually destroyed during the war and the only masonry standing to any great height is the gatehouse with its two towers, one of which bears the marks of a repaired breech. However, the earthwork fortifications built by the Royalists are quite impressive, particularly the bastion lying in front of the gatehouse and the diamond-shaped bastion lying to the south of the castle.

Cambridge Castle, Cambridgeshire (TL 446593)

The site of the Norman and medieval castle at Cambridge is now occupied by council offices but two of the large earthwork bastions built in 1643 can be viewed.

Earith Bulwark and The Standground, Horsey Hill, Cambridgeshire (TL 393750; TL 224960)

Two fine Civil War fortifications survive in the old county of Huntingdonshire. They can best be appreciated from the air but the low-level earthworks can be made out at ground level. Their purpose is not too clear today, for they appear to be situated in places unlikely to have been of strategic value in the war. The site at Earith sits in a field near the old River Bedford.

Carmarthen, Dyfed (SN 412200)

Part of the earthwork *enceinte* survives west of Friar's Park at the east end of the town. The site, known as The Bulwarks, consists of a regular bastion attached to a ditch and bank that runs south towards the River Towy, where it connects to a demi-bastion now filled in. These earthworks have been described as the only example of an earthen town defence in anything like its original condition.

Raglan Castle, Gwent (SO 415083)

Raglan is about halfway between Monmouth and Abergavenny just off the A40. The castle is situated ½ mile north of the village, and is administered by CADW: Welsh Historic Monuments. The devastation brought by the Civil War and the attempts at slighting the towers can be seen clearly. Not so obvious are the Civil War defences or the Parliamentarian siegeworks. One such battery lies ¼ mile north-east of the castle, but construction of a small water-tank has damaged the site and its form can be appreciated only from the air. Part of the massive defences built by the Royalists survives on the edge of the farmyard of Castle Farm just by the ruins. This is privately owned.

Fort Royal, Worcester, Hereford and Worcester (SO 855543)

Worcester had extensive earthwork defences built during the war but these have been swept away over the centuries. The remains of the quadrangular earthwork known as Fort Royal do survive, however, to the east of the Cathedral. Walking past the Civil War Museum at The Commandery along Sidbury Road, turn left into Wylde's Lane. On the right about 100yds is Fort Royal Park.

Isle of Man

Besides several coastal batteries, two Civil War forts survive at Bishopscourt (SC 328924) and at Ballachurry (SC 405970). The latter, named Fort Loyal, has been recently restored.

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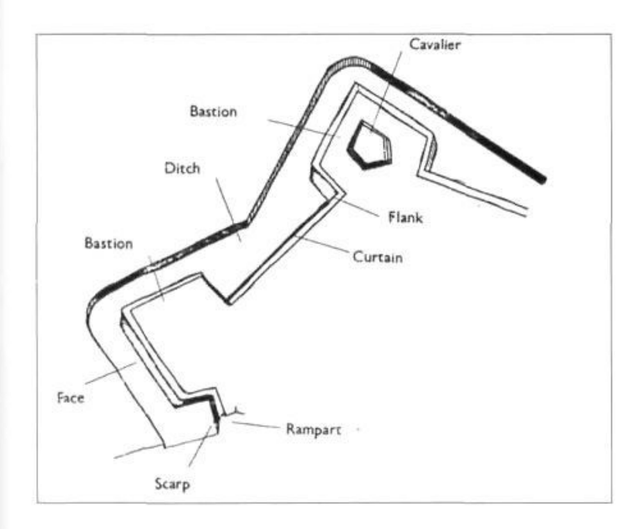
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Glossary of fortification terms



Parts of a fortification. This plan reflects the classic Dutch form of artillery fortification with the bastion perpendicular to the curtain walls. Included are some of the main features of a bastioned fortification. (From Harrington, 1978)

abbatis Defence formed of felled trees; the sharpened ends face the enemy.
approaches Trenches built by besieging forces in the direction of the place under attack.
bastion Formed projection, usually symmetrical, from the curtain on the side or at an angle of a defensive work, providing flanking cover for adjoining defences. By the 17th century, it was normally angular with two forward faces and two flanks.
battery A fortified position for mounting cannon.
berm Narrow strip of flat ground between the rampart and the ditch.
blindes Wooden boards intended to provide protection and cover.
breastwork Parapet of earth usually constructed in haste.
bulwark A bastion; the terms are used indiscriminately though bulwark more often implies a platform for artillery.
cavalier Raised earthwork platform from which to command a particular position or for an additional tier of guns for defence.
chevaux-de-frise Wooden obstacle consisting of square beams connected to stakes and designed to slow down or halt advancing troops.
circumvallation A line of siegeworks that faces open country.
contravallation A line of siege trenches designed to protect against a relieving force.
covered way Communiction route protected by a parapet.
curtain Run of wall or rampart between towers and/or bastions.
demi-bastion Bastion halved axially on plan, i.e. with one forward face and one flank.
enceinte Main line of bastions and curtain, particularly of a fortified town, as distinct from outworks.
enfilade The delivery of raking fire at an objective such as a length of trench.
face Length of defence facing towards the field, i.e. face of a bastion; one of the two sides that together form the forward angle.
false braye A defence on the berm.
faggots Bundles of wood used to fill in trenches.
fascines Bundles of wood used as cover.
flank Length of defence facing towards adjacent defences from which to provide covering fire, e.g. flank of a bastion – the side linking face and curtain.
fort Detached stronghold with provision for flank defence.
gabions Baskets filled with earth as a protection for cannon.
glacis Slope on which attackers are exposed to the fire of defenders.
graffe A ditch.
half-moon An outwork originally crescent-shaped, but more often with two faces forming a salient angle; placed outside the main work in front of the curtain or bastion.
hornwork An advanced work consisting of a short curtain between two demi-bastions, often joined to the main work by long sides.
leaguer The headquarters or camp of a besieging force.
lines of communication A circuit of fortifications.
mount A platform or battery.
outworks Fortifications outside the main defences of a place.
palisado Strong timber stakes. i.e. palisade, usually set upright with sharpened ends as part of a defensive system; sometimes placed horizontally in a trench.
parapet Low mound or wall usually along the front edge of a rampart giving protection to the men and guns behind it.
pitfall Concealed pit.
ravelin Work similar to a half-moon but always placed before the curtain.
redan A detached outwork, V-shaped in plan with an open rearward side.
redoubt A detached outwork, usually rectangular in plan and enclosed on all sides. It usually formed part of a larger system of defence.
salient Angle projecting towards the field.
sap A trench.
scarp Inner side of a ditch, i.e. the ditch slope facing towards the enemy.
sconce A detached fort with bastions.
storm poles Horizontal sharpened stakes positioned to hinder storming operations.
trace Horizontal outline, i.e. plan of a work.
turnpikes Wooden obstacles blocking a roadway.
workes [sic] Contemporary term for fortifications.
zigzag Another term for advanced trenches or approaches.

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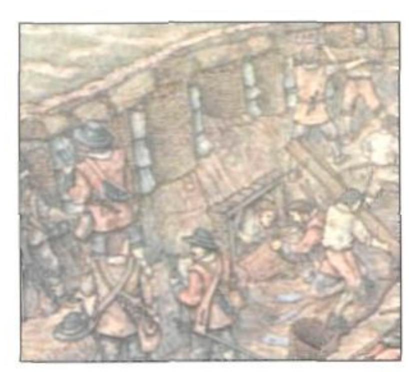
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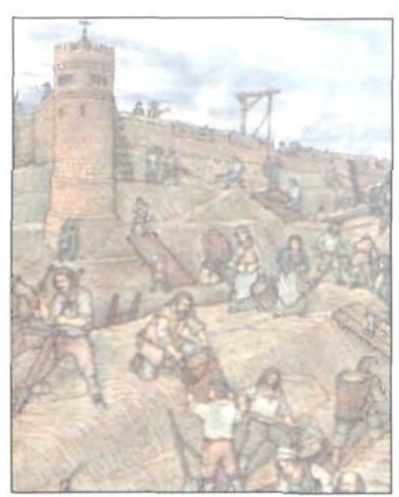
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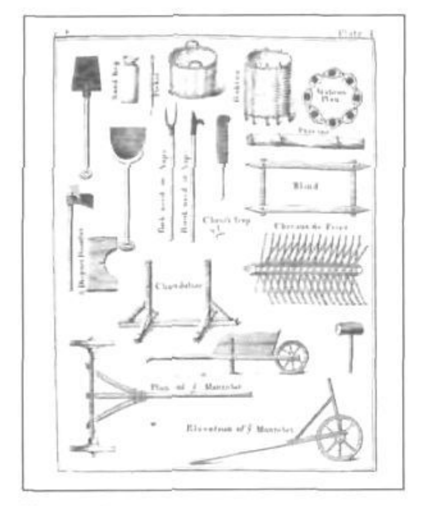


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